Final

ENVIRONMENTAL ASSESSMENT

Addressing the Privatization of Military Family Housing at Grand Forks Air Force Base, North Dakota

May 2011

Report Documentation Page

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14. ABSTRACT

Consistent with the USAF Housing Privatization Program, the AMC proposes to convey MFH units, grant leases of land, and transfer responsibility for providing housing at Grand Forks AFB to a private developer (the Project Owner [PO]). The transition period would begin upon completion of contractual matters initiating the Proposed Action and would last for up to 6 years. During the transition period, the number of available MFH units at Grand Forks AFB would be gradually reduced from 833 to 547 units, but at no time would there be fewer than 547 units available. At all times during the transition period, sufficient numbers of units for all eligible pay grades would be maintained. Specific transactions that would occur between Grand Forks AFB and the PO as part of the Proposed Action are as follows Grand Forks AFB would convey 833 MFH units to the PO. Grand Forks AFB would grant 50-year leases for two parcels of land: Parcel 1 (325.44 acres) consists of MFH neighborhoods and Parcel 3 (1.29 acres) consists of a dog park. In addition, the existing Holly neighborhood boundaries would be modified by removing a small portion of undeveloped land on the western and northern border of that neighborhood. Grand Forks AFB would grant up to a 6-year lease for one parcel of land: Parcel 2 (74.97 acres) consists of the Holly MFH neighborhood. All housing units and associated infrastructure in Parcel 2 are scheduled for demolition. Upon successful completion of the demolition of the 286 surplus, inadequate units in the Holly neighborhood, Parcel 2 would be returned to the Government and the lease of this parcel would be terminated. The PO would continue use of 547 units in their present condition. No new unit construction is anticipated. However, the USAF Housing Privatization Program has identified several desired features for new construction and renovation of MFH, its privatized communities, facilities maintenance, and property management for Grand Forks AFB to include construction of a community center/clubhouse with indoor playground and splash park and storage facilities within Parcel 1. For the purposes of this EA, it is assumed that construction of the center/clubhouse with indoor playground and splash park and storage facilities would occur as part of the Proposed Action.

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ACRONYMS AND ABBREVIATIONS

$\mu g/m^3$	micrograms per cubic meter
319 ABW	319th Air Base Wing
319 MSG	319th Mission Support Group
ACM	asbestos-containing material
ACHP	Advisory Council on Historic Preservation
AFB	Air Force Base
AFI	Air Force Instruction
AFPAM	Air Force Pamphlet
AFPD	Air Force Policy Directive
AFOSH	Air Force Occupational and Environmental Safety, Fire Protection, and Health
AFS	Air Force Station
AICUZ	Air Installation Compatible Use Zone
AMC	Air Mobility Command
AOC	Area of Concern
APE	Area of Potential Effect
AST	aboveground storage tank
AQCR	Air Quality Control Region
B-3	North Dakota County Road B-3
BAH	Basic Allowance for Housing
bgs	below ground surface
BMP	best management practice
BTU	British thermal unit
C&D	construction and demolition
CAA	Clean Air Act
CATEX	Categorical Exclusion
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2	carbon dioxide
CWA	Clean Water Act
dBA	A-weighted decibels
DHS	Department of Homeland Security
DNL	day-night average A-weighted sound level
DOD	Department of Defense
EA	Environmental Assessment
EBS	Environmental Baseline Survey
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EISA	Energy Independence and Security Act
EO	Executive Order
ERP	Environmental Restoration Program
ESA	Endangered Species Act
ESCP	erosion and sediment control plan
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONPA	Finding of No Practicable Alternative
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
ft^2	square feet
FTA	Fire Training Area
FY	Fiscal Year
GFMSA	Grand Forks Metropolitan Statistical Area
GHG	greenhouse gas
GOQ	General Officer's Quarters
gpm	gallons per minute
HAP	hazardous air pollutant
HAZMART	hazardous materials pharmacy
HMMP	hazardous material management program
HRMA	Housing Requirements and Marketing Analysis
HUD	U.S. Department of Housing and Urban Development
HVAC	heating, ventilation, and air conditioning
I	Interstate
ICRMP	Integrated Cultural Resources Management Plan
IDEA	Installation Development Environmental Assessment
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
INRMP	Integrated Natural Resources Management Plan
IRT	Innovative Readiness Training
JP-8	jet propellant-8
LBP	lead-based paint
LID	low-impact development

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LTM	long-term monitoring
MFH	Military Family Housing
mg/m^3	milligrams per cubic meter
MHPI	Military Housing Privatization Initiative
MILCON	military construction
MMRP	Military Munitions Response Program
MSA	Munitions Storage Area
MSDS	Material Safety Data Sheets
msl	mean sea level
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NDAAQS	North Dakota Ambient Air Quality Standards
NDAC	North Dakota Administrative Code
NDDH	North Dakota Department of Health
NDDH/DWQ	North Dakota Department of Health, Division of Water Quality
NDPDES	North Dakota Pollutant Discharge Elimination System
NEPA	National Environmental Policy Act
NFA	No Further Action
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NOA	Notice of Availability
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
ntu	nephelometric turbidity units
NWI	National Wetlands Inventory
NWR	National Wildlife Refuge
O_3	ozone
O&M	operations and maintenance
OSHA	Occupational Safety and Health Administration
OSLA	Old Sanitary Landfill Area
OWS	Operation Walking Shield
Pb	lead
PC	Program Comment
PCB	polychlorinated biphenyl
pCi/L	picoCuries per liter
P.L.	Public Law
$PM_{2.5}$	particulate matter equal to or less than 2.5 microns in diameter
PM_{10}	particulate matter equal to or less than 10 microns in diameter
PO	Project Owner
POD	point of demarcation
POL	petroleum, oil, and lubricant
ppm	parts per million
PSD	Prevention of Significant Deterioration
PVNP	Prairie View Nature Preserve
QD	quantity-distance
RCRA	Resource Conservation and Recovery Act
ROI	Region of Influence
RPA	remotely piloted aircraft
SAP	satellite accumulation point
SDWA	Safe Drinking Water Act
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	sulfur dioxide
SOQ	Senior Officer's Quarters
SPCC	Spill Prevention, Control, and Countermeasures
SQG	small-quantity generator
SSPP	Strategic Sustainability Performance Plan
SWMU	solid waste management unit
SWPPP	Storm Water Pollution Prevention Plan
TDS	total dissolved solids
TMDL	Total Maximum Daily Load
tpy	tons per year
UFC	Unified Facilities Criteria
US	U.S. Highway
U.S.C.	United States Code
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
UST	underground storage tank
VOC	volatile organic compound

FINDING OF NO SIGNIFICANT IMPACT (FONSI)

Environmental Assessment Addressing Privatization of Military Family Housing at Grand Forks Air Force Base, North Dakota

Introduction

Federal actions that potentially involve significant impacts on the environment must be reviewed in accordance with the National Environmental Policy Act (NEPA) and all other applicable laws. The U.S. Air Force (USAF) has completed an Environmental Assessment (EA) to address the potential environmental consequences associated with conveying military family housing (MFH) units, granting leases of land, and transferring responsibility for providing housing at Grand Forks Air Force Base (AFB) to a private developer (the Project Owner [PO]). This FONSI incorporates the EA by reference.

The USAF operates and maintains approximately 104,000 MFH units at its installations throughout the United States. More than 38 percent of all units do not meet current modern standards and require either major improvement or replacement. At most installations, the demand for adequate on-installation housing exceeds supply. The lack of adequate MFH units forces many military members and their families to live in on-installation housing that is in need of repair, renovation, or replacement; or requires them to live off-installation where the cost and quality of housing can vary considerably. Often, the cost to military members and their families to live off-installation is 15 to 20 percent greater than the cost to live on-installation. The USAF estimates that as much as $7.6 billion would be needed to bring its on-installation housing up to current standards.

In recognition of these problems, Congress enacted Section 2801 of the National Defense Authorization Act for Fiscal Year (FY) 1996 (Public Law [P.L.] 104-106, codified at Title 10 of the United States Code [U.S.C.] Sections 2871–2885). Also known as the Military Housing Privatization Initiative (MHPI), this provision of law creates alternative authorities for improvement and construction of MFH. The MHPI was designed and developed to attract private sector financing, expertise, and innovation to provide necessary housing faster and more efficiently than traditional military construction (MILCON) processes would allow.

Consistent with the USAF Housing Privatization Program, Headquarters Air Mobility Command (AMC) proposes to convey MFH units, grant leases of land, and transfer responsibility for providing housing and ancillary supporting facilities at Grand Forks AFB, North Dakota, to a private developer (the PO). The Proposed Action is part of the Northern Group MHPI, which includes Cavalier Air Force Station (AFS), Grand Forks AFB, and Minot AFB, North Dakota; Ellsworth AFB, South Dakota; Mountain Home AFB, Idaho; and Cannon AFB, New Mexico.

Purpose and Need for the Proposed Action

The purpose of the Proposed Action is to vest responsibility in a private developer for MFH at Grand Forks AFB. The need for the Proposed Action is to provide affordable, quality housing and ancillary facilities to military members and their families through demolition of surplus, inadequate units and renovation of existing family housing units so that they meet current USAF standards.

The goal of the Northern Group MFPI is to provide uniformed services members and their families with access to safe, secure, quality, affordable, well-maintained housing in a military community where they

choose to live. MFH privatization would help accelerate housing improvements, alleviate housing shortages, and reduce waiting times for adequate housing, ultimately improving morale of USAF personnel and their families. A majority of MFH units on Grand Forks AFB were constructed in the past 12 years and are in excellent condition. However, portions of the MFH inventory at Grand Forks AFB exhibit a principal concern facing MFH throughout the USAF. Some portions of MFH units show signs of age and continuous use to such an extent that demolition is warranted. Many units are not energy-efficient and housing density is too high in some neighborhoods. Housing interiors are inadequate by modern criteria in that bedroom closets, kitchen storage, and kitchen counter space are insufficient; and plumbing, electrical systems, and heating, ventilation, and air conditioning (HVAC) units are inefficient.

Description of the Proposed Action

Under the Proposed Action, Grand Forks AFB would execute agreements with the PO to convey real property, lease land, and have the PO assume responsibility to operate a rental housing development for the benefit of USAF and other personnel. Under agreements with Grand Forks AFB, the PO would be responsible to plan, design, develop, renovate, demolish, construct, own, operate, maintain, and manage all necessary assets for MFH and designated ancillary supporting facilities. Additionally, the PO would be required to implement and follow appropriate environmental management laws, efforts, and plans regarding resources including land, soil, water, air, vegetation, hazardous materials and wastes, and cultural resources. In exchange for providing housing, the PO would be entitled to rental income based on each occupant's Basic Allowance for Housing (BAH).

Existing MFH units at Grand Forks AFB are organized within 12 neighborhoods. These neighborhoods are Beech, Holly, Lewis & Clark Trail, Prairie View Court, Redwood, Sunflake, Dakota Skies, Meadowlark Manor, Northern Lights Estates, Red River Crossing, Roughrider Way, and Whitetail Range.

There are 833 existing MFH units on Grand Forks AFB, and the installation believes 547 of these MFH units are currently adequate in their present condition. The 2007 HRMA projection for FY 2012 identified the need for an end-state of 274 MFH units. However, this projection for the need for 274 MFH units by the HRMA took into account the loss of the existing tanker mission on Grand Forks AFB but did not take into account the subsequent acquisition of the Predator/Global Hawk aircraft mission. Based on this updated information, it is currently estimated that the end-state requirement would be for 547 MFH units. This leaves 286 MFH units as either in excess of projected needs or currently in a substandard condition. These 286 MFH units, located in the Holly neighborhood, would be demolished by the PO under the Proposed Action. The remaining 547 units would be left "as is" and would require maintenance and upgrades over the course of the 50-year lease.

Specific transactions that would occur between Grand Forks AFB and the PO as part of the Proposed Action are as follows:

- Grand Forks AFB would convey 833 MFH units to the PO.
- Grand Forks AFB would grant 50-year leases for two parcels of land: Parcel 1 (325.44 acres) consists of MFH neighborhoods and Parcel 3 (1.29 acres) consists of a dog park. In addition, the existing Holly neighborhood boundaries would be modified by removing a small portion of undeveloped land on the western and northern border of that neighborhood.
- Grand Forks AFB would grant up to a 6-year lease for one parcel of land: Parcel 2 (74.97 acres) consists of the Holly MFH neighborhood. All housing units and associated infrastructure in Parcel 2 are scheduled for demolition. Upon successful completion of the demolition of the 286 surplus, inadequate units in the Holly neighborhood, Parcel 2 would be returned to the Government and the lease of this parcel would be terminated.

- The PO would continue use of 547 units in their present condition. No new unit construction is anticipated. However, the USAF Housing Privatization Program has identified several desired features for new construction and renovation of MFH, its privatized communities, facilities maintenance, and property management for Grand Forks AFB to include construction of a community center/clubhouse with indoor playground and splash park and storage facilities within Parcel 1. For the purposes of this EA, it is assumed that construction of the center/clubhouse with indoor playground and splash park and storage facilities would occur as part of the Proposed Action.
- Tot lots, playgrounds, bus stops, common mailbox clusters, and housing office (Building 119) would be conveyed to the PO. The housing maintenance facility, existing sports fields adjacent to the schools, two schools (Twining Middle School and Eielson Elementary School), Building 1336 (wastewater lift station), Building 1146 (back-up power generation system), and the Prairie View Nature Preserve on Grand Forks AFB would not be conveyed to the PO.
- The PO would be responsible for ensuring that maintenance of conveyed areas complies with provisions in the installation's current Integrated Natural Resources Management Plan and Integrated Cultural Resources Management Plan. The Government retains the right to access and manage those natural and cultural resources covered by such plans.

Description of the No Action Alternative

CEQ regulations require inclusion of the No Action Alternative. The No Action Alternative serves as a baseline against which the impacts of the Proposed Action and Alternatives can be evaluated. Under the No Action Alternative, Grand Forks AFB would not implement the Proposed Action. Grand Forks AFB would continue to provide for the housing needs of military personnel and family members.

Grand Forks AFB has 547 MFH units that have been constructed within the past 10 years. It is anticipated that these 547 MFH units would continue to provide adequate housing for many years into the future with only minor maintenance and repairs under the No Action Alternative.

The remainder of the MFH units (286 units) would also continue to be used. These units are substantially older (40 to 50 years old) and would require more intensive maintenance and renovations to bring them up to current USAF housing standards. Under the No Action Alternative, it is anticipated that these older MFH units would continue to be maintained and renovated, as needed. Based on historical trends, it is assumed that the amount of Congressional funding for MFH would not change and that the housing maintenance backlog would continue to increase. In their existing condition, these MFH units are inadequate facilities.

Results of the HRMA and other USAF surveys indicate that Grand Forks AFB should have no more than 547 MFH units. Under the No Action Alternative, the MFH units being demolished in ongoing and scheduled MILCON-funded projects would still be demolished. Under the No Action Alternative, Grand Forks AFB would have a surplus of 286 MFH units. It is assumed under the No Action Alternative that surplus units would either continue to be maintained or renovated. The maintenance and renovation of these surplus units would be an unnecessary and costly burden to the USAF.

Under the No Action Alternative, Grand Forks AFB would continue to maintain and upgrade infrastructure components as required. Some of the utilities systems and pavements in the MFH parcels are old and require upgrades or replacements to improve overall levels of service and efficiency.

Of the existing 833 MFH units, 286 units proposed for conveyance are in excess of what Grand Forks AFB would need to provide housing to military families, the No Action Alternative presumes that

inadequate and surplus units would require major renovation or demolition activities at some point in the future; those activities would require additional NEPA analyses at that time.

Summary of Anticipated Environmental Impacts

The Proposed Action and No Action Alternative have been reviewed in accordance with NEPA as implemented by the regulations of the CEQ and 32 Code of Federal Regulations (CFR) Part 989 (*Environmental Impact Analysis Process*). The public and regulatory agency scoping process focused the analyses on the following environmental resources: noise, land use, air quality, geological resources, water resources, biological resources, cultural resources, socioeconomics and environmental justice, infrastructure, hazardous materials and wastes, and safety. Details of the environmental consequences can be found in the EA, which is hereby incorporated by reference.

Conclusions

Public Review. Based on the description of the Proposed Action as set forth in the EA, all activities were found to comply with the criteria or standards of environmental quality and coordinated with the appropriate Federal, state, and local agencies. All Native American tribes potentially affected by the Proposed Action were also consulted to solicit their concerns. The Draft EA and FONSI were made available to the public for a 30-day review period, and no public comments were received. Six agency comments and six Native American tribal comments were received during the comment period and incorporated, as applicable, into the analysis of the potential environmental impacts performed as part of the Final EA.

Finding of No Significant Impact. Based on the information and analysis presented in the EA conducted in accordance with the requirements of the National Environmental Policy Act, the Council on Environmental Quality Regulations, implementing regulations set forth in 32 CFR Part 989 (EIAP), as amended, and review of the agency and Native American tribal comments submitted during the 30-day public comment period, I conclude that implementation of the Proposed Action would not result in significant impacts on the quality of the human or natural environment. For these reasons, a FONSI is approved and preparation of an Environmental Impact Statement is not warranted. This decision has been made after taking into account all submitted information, and considering a full range of practical alternatives that would meet project requirements and are within the legal authority of the USAF.

DONALD L. SHAFFER, Colonel, USAF
Commander, 319th Air Base Wing

11 JUL 11
Date

COVER SHEET

FINAL
ENVIRONMENTAL ASSESSMENT
ADDRESSING THE PRIVATIZATION OF MILITARY FAMILY HOUSING
AT GRAND FORKS AIR FORCE BASE, NORTH DAKOTA

Responsible Agencies: U.S. Air Force (USAF), Headquarters Air Mobility Command (AMC), Scott Air Force Base (AFB), Illinois; and Grand Forks AFB, North Dakota.

Affected Location: Grand Forks AFB.

Proposed Action: Privatization of Military Family Housing (MFH) at Grand Forks AFB.

Report Designation: Final Environmental Assessment (EA).

Abstract: Consistent with the USAF Housing Privatization Program, the AMC proposes to convey MFH units, grant leases of land, and transfer responsibility for providing housing at Grand Forks AFB to a private developer (the Project Owner [PO]). The transition period would begin upon completion of contractual matters initiating the Proposed Action and would last for up to 6 years. During the transition period, the number of available MFH units at Grand Forks AFB would be gradually reduced from 833 to 547 units, but at no time would there be fewer than 547 units available. At all times during the transition period, sufficient numbers of units for all eligible pay grades would be maintained.

Specific transactions that would occur between Grand Forks AFB and the PO as part of the Proposed Action are as follows:

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- Grand Forks AFB would grant up to a 6-year lease for one parcel of land: Parcel 2 (74.97 acres) consists of the Holly MFH neighborhood. All housing units and associated infrastructure in Parcel 2 are scheduled for demolition. Upon successful completion of the demolition of the 286 surplus, inadequate units in the Holly neighborhood, Parcel 2 would be returned to the Government and the lease of this parcel would be terminated.
- The PO would continue use of 547 units in their present condition. No new unit construction is anticipated. However, the USAF Housing Privatization Program has identified several desired features for new construction and renovation of MFH, its privatized communities, facilities maintenance, and property management for Grand Forks AFB to include construction of a community center/clubhouse with indoor playground and splash park and storage facilities within Parcel 1. For the purposes of this EA, it is assumed that construction of the center/clubhouse with indoor playground and splash park and storage facilities would occur as part of the Proposed Action.

- Tot lots, playgrounds, bus stops, common mailbox clusters, and housing office (Building 119) would be conveyed to the PO. The housing maintenance facility, existing sports fields adjacent to the schools, two schools (Twining Middle School and Eielson Elementary School), Building 1336 (wastewater lift station), and Building 1146 (back-up power generation system) on Grand Forks AFB would not be conveyed to the PO.
- The PO would be responsible for ensuring that maintenance of conveyed areas complies with provisions in the installation's current Integrated Natural Resources Management Plan and Integrated Cultural Resources Management Plan. The Government retains the right to access and manage those natural and cultural resources covered by such plans.

The EA has been prepared to evaluate the Proposed Action and alternatives, including the No Action Alternative, and to aid in determining whether a Finding of No Significant Impact can be prepared or whether an Environmental Impact Statement is needed. Resources that have been considered in the impact analysis are noise, land use, air quality, geological resources, water resources, biological resources, cultural resources, socioeconomic resources and environmental justice, infrastructure, hazardous materials and wastes, and safety.

Written inquiries regarding this document should be directed to the Public Affairs Office, 319 Air Base Wing, 375 Steen Boulevard, Building 313, Grand Forks Air Force Base, North Dakota 58205. Telephone calls can be directed to 701-747-5023, and email comments should be directed to PublicAffairsOfficeGrandForksAFB@us.af.mil.

Final

ENVIRONMENTAL ASSESSMENT
ADDRESSING THE PRIVATIZATION OF MILITARY FAMILY HOUSING AT GRAND FORKS AIR FORCE BASE, NORTH DAKOTA

GRAND FORKS AIR FORCE BASE
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MAY 2011

Executive Summary

Introduction

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The goal of the Northern MHPI is to provide uniformed services members and their families access to safe, secure, quality, affordable, well-maintained housing in a military community where they choose to live. A majority of MFH units on Grand Forks AFB were constructed in the past 12 years and are in excellent condition. However, portions of the MFH inventory at Grand Forks AFB exhibit a principal concern facing MFH throughout the USAF: some portions of MFH units show signs of age and continuous use to such an extent that demolition is warranted. Many units are not energy-efficient and housing density is too high in some neighborhoods. Housing interiors are inadequate by modern criteria in that bedroom closets, kitchen storage, and kitchen counter space are insufficient; and plumbing, electrical systems, and heating, ventilation, and air conditioning (HVAC) units are inefficient.

Description of the Proposed Action and No Action Alternative

Proposed Action. Consistent with the USAF Housing Privatization Program, Headquarters AMC proposes to convey 833 MFH units, lease three parcels of land (Parcel 1 [325.44 acres], Parcel 2

[74.97 acres], and Parcel 3 [1.29 acres]), and transfer responsibility for providing housing and ancillary supporting facilities at Grand Forks AFB to the PO. Upon successful completion of the demolition of 286 surplus, inadequate units, Parcel 2 would be returned to the Government and the lease of this parcel would be terminated.

MFH units at Grand Forks AFB are organized within 12 neighborhoods. These neighborhoods are Beech, Holly, Lewis & Clark Trail, Prairie View Court, Redwood, Sunflake, Dakota Skies, Meadowlark Manor, Northern Lights Estates, Red River Crossing, Roughrider Way, and Whitetail Range.

Grand Forks AFB participates in Operation Walking Shield (OWS), a unique civilian and military collaborative program that seeks integration of combined civilian and military activities through the Department of Defense's (DOD) Innovative Readiness Training (IRT) program within the Department of Defense (DOD). The IRT program uses U.S. military expertise to address the inadequate health care, infrastructure, and housing on American Indian reservations. To address the chronic overcrowding and homelessness facing American Indian reservations, OWS has provided more than 1,000 housing units to more than 6,000 American Indians on numerous reservations in Montana, North Dakota, South Dakota, and Minnesota. This has been done in collaboration with the USAF. Grand Forks AFB has transferred 218 housing units (east side of Prairie View Court) to Native American Tribes (e.g., Fort Berthold, Turtle Mountain, and Sisseton) in 1998 and 1999, 18 units in the Redwood neighborhood were removed and transferred to OWS in 2005, and 34 housing units (16 duplexes and 2 singles) in the former March neighborhood (now part of Meadowlark Manor) were removed and transferred to OWS in 2009. The potential impacts of these actions were addressed in previously prepared Environmental Assessments (EAs) or Categorical Exclusions (CATEXs) and associated Environmental Baseline Surveys (EBSs).

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- The PO would continue use of 547 units in their present condition. No new MFH unit construction is anticipated. However, the USAF Housing Privatization Program has identified several desired features for new construction and renovation of MFH, its privatized communities, facilities maintenance, and property management for Grand Forks AFB to include construction of a community center/clubhouse with indoor playground and splash park and storage facilities within Parcel 1. For the purposes of this EA, it is assumed that construction of the center/clubhouse with indoor playground and splash park and storage facilities would occur as part of the Proposed Action.
- Tot lots, playgrounds, bus stops, common mailbox clusters, and the housing office (Building 119) would be conveyed to the PO. The housing maintenance facility, existing sports fields adjacent to the schools, two schools (Twining Middle School and Eielson Elementary School),

Building 1336 (wastewater lift station), Building 1146 (back-up power generation system), and the Prairie View Nature Preserve (PVNP) on Grand Forks AFB would not be conveyed to the PO.

- The PO would be responsible for ensuring that maintenance of conveyed areas complies with all provisions of the installation's Integrated Natural Resources Management Plan (INRMP) and Integrated Cultural Resources Management Plan (ICRMP) and any future modifications thereof. The Government retains the right and responsibility to access and manage those natural and cultural resources covered by such plans.

No Action Alternative. Under the No Action Alternative, Grand Forks AFB would not implement the Proposed Action. Grand Forks AFB would continue to provide for the housing needs of military personnel and family members.

Results of the Housing Requirements and Market Analysis (HRMA) and other USAF surveys (discussed in the EA) indicate that Grand Forks AFB should have no more than 547 MFH units. Under the No Action Alternative, Grand Forks AFB would have a surplus of 286 MFH units. It is assumed under the No Action Alternative that surplus units would either continue to be maintained or renovated. The maintenance and renovation of these surplus units would be an unnecessary and costly burden to the USAF. In addition, the No Action Alternative presumes that these inadequate and surplus units could require demolition at some point in the future. Demolition of these inadequate and surplus units would require additional National Environmental Policy Act (NEPA) analyses at that time.

Under the No Action Alternative, Grand Forks AFB would continue to maintain and upgrade infrastructure components as required. Some of the utilities systems and pavements in the MFH parcels are old and require upgrades or replacements to improve overall levels of service and efficiency.

Summary of Environmental Effects

Noise. Demolition of the MFH units in the Holly neighborhood would occur adjacent to sensitive noise receptors, including residences and playfields, however, noise generation would last only for the duration of demolition activities and would diminish as demolition activities move farther away from the receptor. Demolition activities under the Proposed Action would result in short-term, minor, adverse impacts on the noise environment in the vicinity of demolition activities. The Proposed Action would also include continued maintenance and upgrades of MFH units and ancillary facilities, and possible construction of desired features (e.g., community center/clubhouse with indoor playground and splash park and storage facilities). Although the exact locations of these features are not known, short-term, minor, adverse impacts on the noise environment could occur if construction activities required the use of heavy equipment and occurred near sensitive receptors (e.g., occupied residences, schools, and athletic fields).

Land Use. The Proposed Action would not require changes to the current and future land use designations, except if desired features such as a community center/clubhouse with indoor playground and splash park and storage facilities are constructed. If the storage facility and community center/clubhouse are constructed, these areas could require changing the land use designation from Family Housing to Community.

Air Quality. The Proposed Action would generate both temporary and long-term air pollutant emissions. Construction and demolition operations would result in short-term emissions of criteria pollutants as combustion products from construction equipment, and evaporative emissions from architectural coatings and asphalt paving operations. Long-term, minor effects would occur from stationary sources such as boilers and heaters. Construction, demolition, and renovation activities associated with the Proposed

Action would not have significant effects on air quality at Grand Forks AFB or on regional or local air quality.

Geological Resources. Short- and long-term, minor, adverse effects on soils would be expected from implementation of the Proposed Action. The primary short-term effects would occur during demolition activities when vegetation is cleared and the earth is bare and soil erosion and sedimentation rates could increase. Long-term, beneficial effects on soils would be expected upon completion of all projects associated with the Proposed Action as impervious surfaces would decrease and vegetation would be reestablished.

Water Resources. The Proposed Action would result in short- and long-term, negligible to minor, adverse effects on groundwater and surface water as impervious surfaces would increase. However, long-term, beneficial impacts on surface water could occur if the square footage of demolished and revegetated areas is greater than the area proposed for development of desired features, thereby reducing impervious surfaces. No direct or indirect impacts on wetlands would occur with implementation of BMPs.

Biological Resources. The Proposed Action would be expected to result in short-term, negligible, adverse effects on vegetation due to temporary disturbances during demolition activities. Direct, short-term, minor, adverse effects on wildlife due to disturbances (e.g., noise and motion) from demolition and renovation activities and heavy equipment use could cause wildlife to engage in escape or avoidance behaviors. Two state-listed species, the Philadelphia vireo (threatened) and merlin (endangered), have the potential to occur within or adjacent to the MFH privatization area and could be adversely affected by the Proposed Action. Short-term, negligible to minor, adverse effects on these species, if they occur within or near the project area, would be expected from temporary noise and motion disturbances during construction, demolition, and renovation activities. Demolition associated with the Proposed Action would be conducted in a manner to avoid adverse impacts on migratory birds to the extent practicable and it is not anticipated that the Proposed Action would have any measureable negative impacts on migratory birds (e.g., direct mortality, decrease in population size, decrease in fitness, repetitive nest failure).

Cultural Resources. No impacts on known archaeological resources would be expected under the Proposed Action. The Proposed Action would occur either in areas that have been previously surveyed or areas of previous disturbance including housing with low probabilities for archaeological resources. The Proposed Action would not be expected to impact National Register of Historic Places (NRHP) eligible architectural resources. The MFH units are not eligible for the NRHP under criteria A through D or criterion consideration G nor are they located near a NRHP-eligible building. There are no known resources of significance to Native American tribes at Grand Forks AFB.

Socioeconomic Resources and Environmental Justice. No significant impacts would be expected on employment levels, household income, or poverty level. There would be a minor, short-term increase in employment related to MFH construction, demolition, and renovation activities on the installation. The use of local labor would have short-term, beneficial impacts on the local economy. Long-term, minor, beneficial impacts would be expected under the Proposed Action. Renovation and timely maintenance of the existing MFH units would increase their value.

Infrastructure. Short-term, negligible to minor, adverse effects on the Grand Forks AFB transportation system would be expected from the implementation of the Proposed Action. Construction and demolition activities would result in a temporary, slight increase in the amount of traffic at the installation from equipment being delivered, debris being removed, and contractors arriving to the work sites.

In addition, short-term, minor, adverse effects on electrical, natural gas, and water supply and communications systems would be expected from the implementation of the Proposed Action. Short-term, negligible to minor, adverse effects on the sanitary sewer and wastewater systems would be expected from the implementation of the Proposed Action. Temporary, minor service interruptions might be experienced when utility lines are disconnected from the 286 MFH units proposed for demolition and connected to the proposed community center and other ancillary facilities. Short-term, minor, adverse effects on solid waste management would be expected from the implementation of the Proposed Action. The 286 excess MFH units would first be offered for donation through OWS's Housing Relocation Program, which would reduce short-term, adverse effects associated with solid waste management by substantially reducing the amount of demolition debris generated.

Long-term, minor, beneficial effects on the electrical, natural gas, and water supply would be expected from the Proposed Action. Following the proposed demolition of 286 MFH units, the overall demand on utilities at Grand Forks AFB would be reduced by a minor amount due to the loss of these buildings. Beneficial impacts would also be expected on sanitary sewer and wastewater systems, storm water systems, communications systems, and solid waste management due to the loss of the MFH units.

Hazardous Materials and Wastes. Short-term, minor, adverse impacts on hazardous materials would be expected as construction, demolition, and renovation activities would require the use of certain hazardous materials such as paints, welding gases, solvents, preservatives, and sealants. Short-term, minor, adverse impacts would be expected on hazardous wastes as a result of a minor increase in the quantity of hazardous wastes generated from proposed construction, demolition, and renovation activities. Some of the MFH units might have mercury-containing thermostats, ionization smoke detectors that contain Americium-241, or heat pumps that contain ozone-depleting substances; and MFH units scheduled for demolition in the Holly neighborhood could contain asbestos-containing materials (ACM) or lead-based paint (LBP). Grand Forks AFB is considered to be polychlorinated biphenyl- (PCB) free; however, light ballasts throughout the installation are assumed to be PCB-contaminated, unless they are labeled PCB-free. Long-term, beneficial impacts would occur from the potential removal of hazardous materials, ACM, LBP, or PCBs.

Safety. Short-term, negligible to minor, direct adverse and long-term, beneficial effects on health and safety would be expected from the Proposed Action. The short-term risk associated with construction contractors would slightly increase at Grand Forks AFB during the normal workday as construction activity levels would increase. In addition, short-term, negligible to minor, adverse impacts would be expected as some of the MFH homes and associated infrastructure slated for conveyance could require removal of ACM, LBP, and PCBs. However, once these materials are removed, long-term, beneficial impacts would be expected from the reduced exposure potential on military personnel and families.

Cumulative Impacts

Cumulative impacts on environmental resources result from the incremental impact of the Proposed Action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts would result from individually minor but collectively significant actions taking place over a period of time by various agencies (Federal, state, and local) or individuals. Informed decisionmaking is served by consideration of cumulative impacts resulting from projects that are proposed, under construction, recently completed, or anticipated to be implemented in the reasonably foreseeable future.

Past and ongoing projects at Grand Forks AFB or in its vicinity that have been identified as contributing to cumulative effects on environmental resources include MILCON-funded MFH demolition projects. Future projects at Grand Forks AFB or in its vicinity that have been identified as contributing to potential cumulative effects on environmental resources include installation development projects (analyzed in the

Installation Development Environmental Assessment), privatization of MFH units, and projects associated with remotely piloted aircraft mission relocation to Grand Forks AFB. Anticipated adverse cumulative effects would be related to environmental impacts from demolition and construction activities (e.g., increased demand of infrastructure and utilities, ground disturbances and soil erosion, sedimentation, and increased pollution in waterways). Anticipated beneficial cumulative effects on socioeconomics in the surrounding area would be expected from economic expenditures associated with the installation development projects, MFH privatization, and mission relocation actions. No significant cumulative impacts on the environment would be anticipated from the Proposed Action in conjunction with other activities.

FINAL
ENVIRONMENTAL ASSESSMENT
ADDRESSING THE PRIVATIZATION OF MILITARY FAMILY HOUSING
AT GRAND FORKS AIR FORCE BASE, NORTH DAKOTA

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1. Purpose of and Need for the Action

This Environmental Assessment (EA) describes and analyzes the Air Mobility Command's (AMC) proposal to privatize military family housing (MFH) at Grand Forks Air Force Base (AFB), North Dakota. This section presents background information, the purpose of and need for privatized MFH, the location and mission of Grand Forks AFB, the scope of environmental review, and an introduction to the organization of this document.

1.1 Background

The U.S. Air Force (USAF) operates and maintains approximately 104,000 MFH units at its installations throughout the United States. More than 38 percent of all units do not meet current modern standards and require either major improvement or replacement. At most installations, the demand for adequate on-installation housing exceeds supply. The lack of adequate MFH forces many military members and their families to live in on-installation housing that is in need of repair, renovation, or replacement; or requires them to live off-installation where the cost and quality of housing can vary considerably. Often, the cost to military members and their families to live off-installation is 15 to 20 percent greater than the cost to live on-installation. The USAF estimates that as much as $7.6 billion would be needed to bring its on-installation housing up to current standards (HQ USAF 2007).

In recognition of these problems, Congress enacted Section 2801 of the National Defense Authorization Act for Fiscal Year (FY) 1996 (Public Law [P.L.] 104-106, codified at Title 10 of the United States Code [U.S.C.] Sections 2871–2885). Also known as the Military Housing Privatization Initiative (MHPI), this provision of law creates alternative authorities for improvement and construction of MFH (see **Appendix A**). The MHPI was designed and developed to attract private sector financing, expertise, and innovation to provide necessary housing faster and more efficiently than traditional military construction (MILCON) processes would allow. By leveraging scarce public funding, the USAF can obtain private sector funds for construction, maintenance, management, renovation, replacement, rehabilitation, and development of USAF MFH and ancillary supporting facilities. The Department of Defense (DOD) has asked the USAF to upgrade all inadequate housing before FY 2010. Inadequate housing does not meet USAF housing standards as specified in Air Force Instruction (AFI) 32-6002, *Family Housing Planning, Programming, Design, and Construction* (January 15, 2008) and the Housing Community Profile. Per AFI 32-60, *Housing* (September 16, 2005), inadequate housing is "any housing unit requiring whole-house improvement or replacement as identified by the services condition assessments, typically exceeding a per-unit cost of $50,000 adjusted by the area cost factor. Services condition assessments utilize private sector housing industry construction codes and sizing standards as a basis for assessing inventory adequacy."

1.2 Purpose of and Need for the Proposed Action

The USAF Housing Privatization Program incorporates the MHPI legislation enacted by Congress in 1996. Consistent with the USAF Housing Privatization Program, USAF Headquarters AMC proposes to convey MFH units, grant leases of land, and transfer responsibility for providing housing and ancillary supporting facilities at Grand Forks AFB to a private developer (the Project Owner [PO]). The Proposed Action is part of the Northern Group MHPI, which includes Grand Forks AFB, Cavalier Air Force Station (AFS), and Minot AFB, North Dakota; Ellsworth AFB, South Dakota; Mountain Home AFB, Idaho; and Cannon AFB, New Mexico.

The purpose of the Proposed Action is to vest responsibility in a private developer for MFH at Grand Forks AFB. The need for the Proposed Action is to provide affordable, quality housing and ancillary

facilities to military members and their families through demolition of surplus, inadequate units and renovation of existing family housing units so that they meet current USAF standards.

The goal of the Northern Group MHPI is to provide uniformed services members and their families access to safe, secure, quality, affordable, well-maintained housing in a military community where they choose to live. A majority of MFH units on Grand Forks AFB were constructed in the past 12 years and are in excellent condition. However, portions of the MFH inventory at Grand Forks AFB exhibit a principal concern facing MFH throughout the USAF: some portions of MFH units show signs of age and continuous use to such an extent that demolition is warranted. Many units are not energy–efficient and housing density is too high in some neighborhoods. Housing interiors are inadequate by modern criteria in that bedroom closets, kitchen storage, and kitchen counter space are insufficient; and plumbing, electrical systems, and heating, ventilation, and air conditioning (HVAC) units are inefficient.

1.3 Location and Mission

Grand Forks AFB is a USAF installation under the AMC. The 319th Air Base Wing (319 ABW), which serves as the host wing, provides base operational support to wing personnel, two tenant units, and one General Support Unit. Grand Forks AFB trains, deploys, and redeploys over 1,300 airmen in support of the Air Expeditionary Force and combatant commander requirements. Grand Forks AFB provides facilities and equipment support for the Department of Homeland Security (DHS), Customs and Border Protection, and the 69th Reconnaissance Group. Grand Forks AFB also provides logistical, medical, civil engineer, contracting, communications, security and force support, as well as facilities/equipment valued at $2.2 billion and executes a budget of $48 million. Tenants on Grand Forks AFB include the 373rd Training Squadron Detachment, the Air Force Audit Agency, the U.S. Army Corps of Engineers (USACE), and the DHS. The average daily population of Grand Forks AFB is approximately 4,919 people, which includes military personnel, family members, DOD employees, and civilian contractors. Active-duty strength consists of approximately 1,693 military and 376 civilian employees (GFAFB 2008a).

Grand Forks AFB is in Grand Forks County near the North Dakota-Minnesota state boundary. The installation is north of and adjacent to the City of Emerado and is 15 miles west of the City of Grand Forks (see **Figure 1-1**). **Figure 1-2** shows an overhead view of the installation and the location of the MFH areas proposed to be privatized.

1.4 Summary of Key Environmental Compliance Requirements

1.4.1 National Environmental Policy Act

The National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. Section 4321–4347) is a Federal statute requiring the identification and analysis of potential environmental impacts associated with proposed Federal actions before those actions are taken. The intent of NEPA is to help decisionmakers make well-informed decisions based on an understanding of the potential environmental consequences and take actions to protect, restore, or enhance the environment. NEPA established the Council on Environmental Quality (CEQ) that was charged with the development of implementing regulations and ensuring Federal agency compliance with NEPA. The CEQ regulations mandate that all Federal agencies use a prescribed structured approach to environmental impact analysis. This approach also requires Federal agencies to use an interdisciplinary and systematic approach in their decisionmaking process. This process evaluates potential environmental consequences associated with a proposed action and considers alternative courses of action.

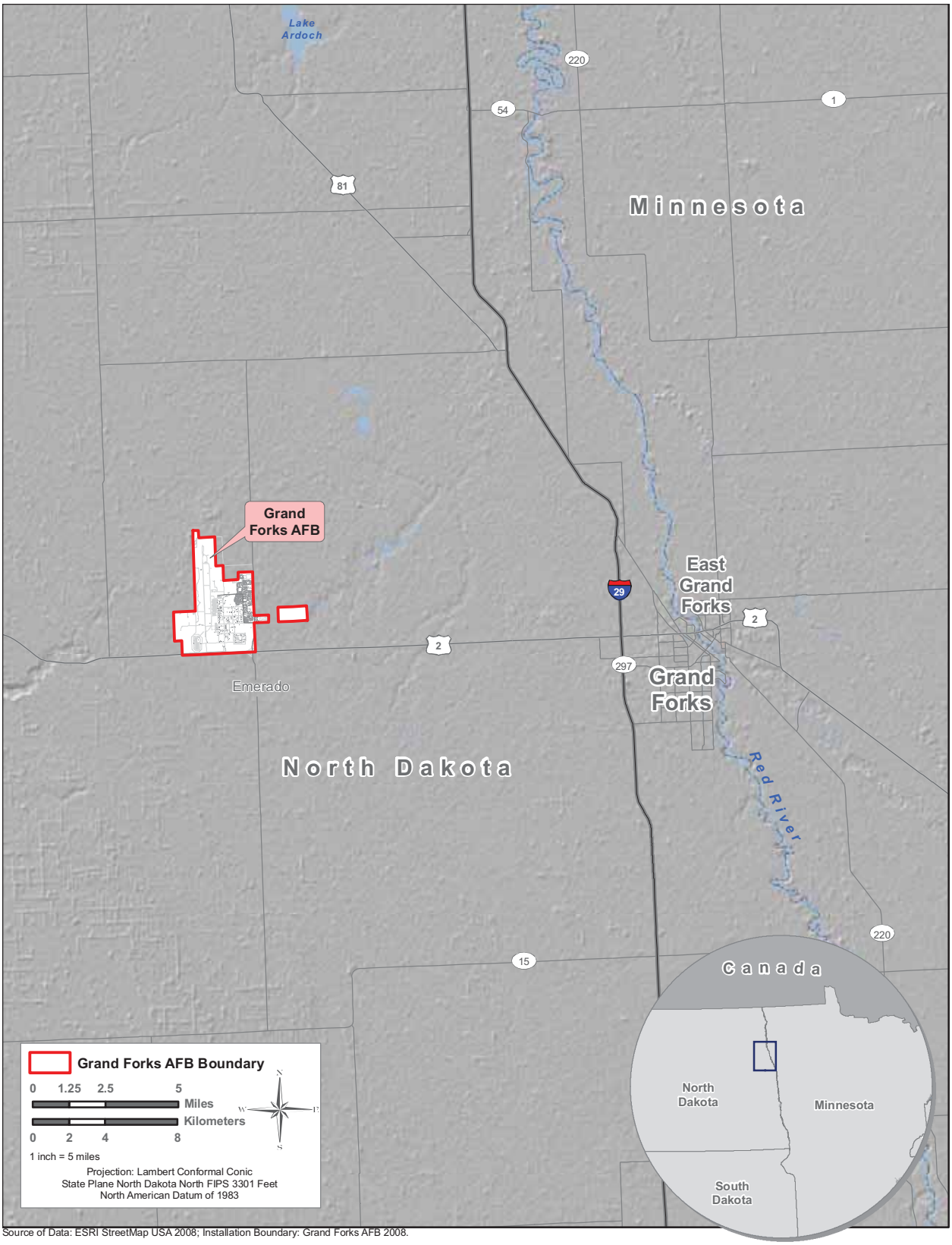
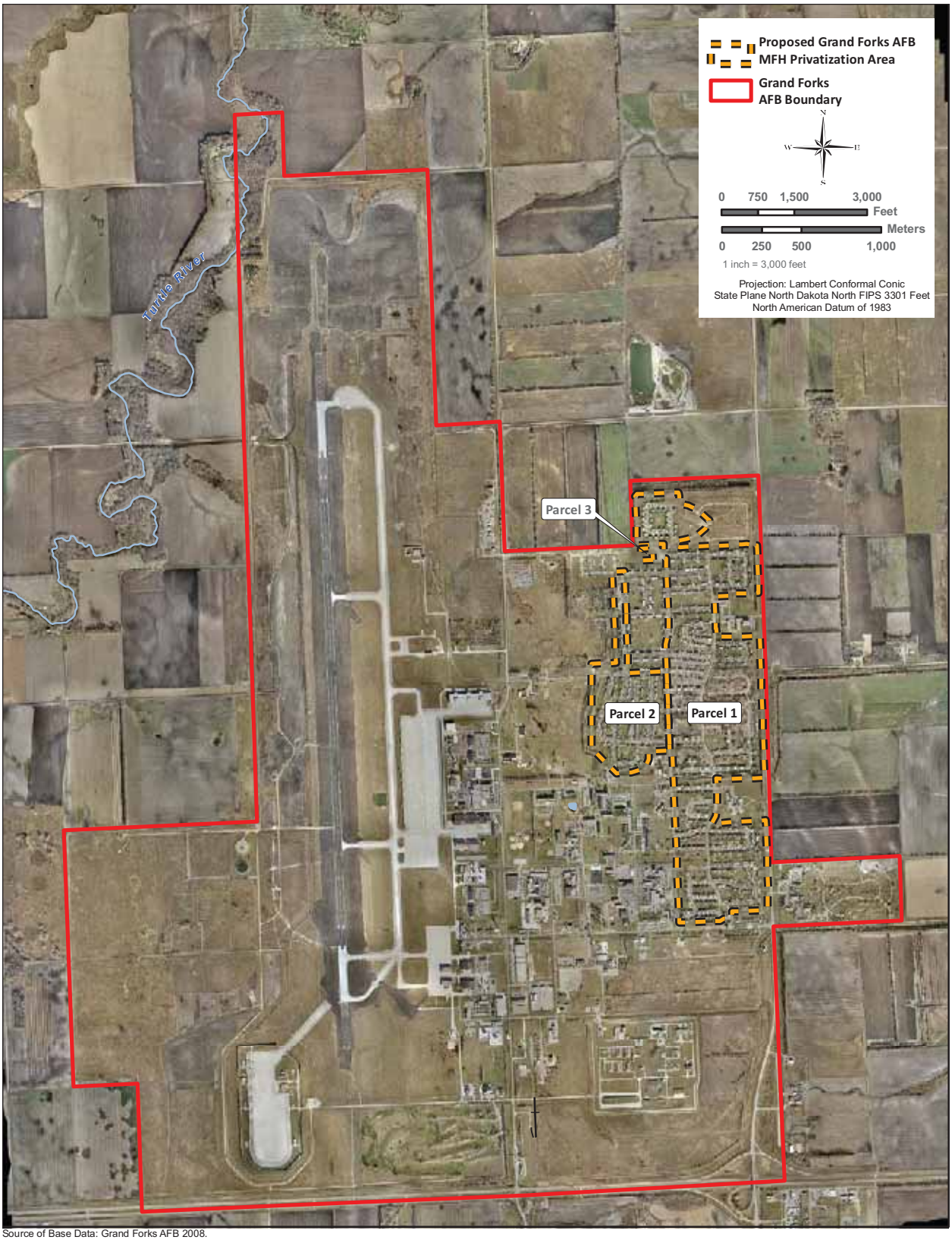


Figure 1-1. Grand Forks AFB and Surrounding Area



Source of Base Data: Grand Forks AFB 2008.

Figure 1-2. Grand Forks AFB and Proposed MFH Privatization Area

The process for implementing NEPA is codified in Title 40 of the Code of Federal Regulations (CFR), Parts 1500–1508, *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act*. The CEQ was established under NEPA to implement and oversee Federal policy in this process. The CEQ regulations specify that an EA be prepared to provide evidence and analysis for determining whether to prepare a Finding of No Significant Impact (FONSI)/Finding of No Practicable Alternative (FONPA), where a FONPA is appropriate (see **Section 1.4.2**), or whether the preparation of an Environmental Impact Statement (EIS) is necessary. The EA can aid in an agency's compliance with NEPA when an EIS is unnecessary and facilitate preparation of an EIS when one is required.

Air Force Policy Directive (AFPD) 32-70, *Environmental Quality*, states that the USAF will comply with applicable Federal, state, and local environmental laws and regulations, including NEPA. The USAF's implementing regulation for NEPA is *Environmental Impact Analysis Process* (EIAP), 32 CFR Part 989, as amended.

1.4.2 Integration of Other Environmental Statutes and Regulations

To comply with NEPA, the planning and decisionmaking process for actions proposed by Federal agencies involves a study of other relevant environmental statutes and regulations. The NEPA process, however, does not replace procedural or substantive requirements of other environmental statutes and regulations. It addresses them collectively in the form of an EA or EIS, which enables the decisionmaker to have a comprehensive view of key environmental issues and requirements associated with the Proposed Action. According to CEQ regulations, the requirements of NEPA must be integrated "with other planning and environmental review procedures required by law or by agency so that all such procedures run concurrently rather than consecutively."

The EA examines potential effects of the Proposed Action and alternatives on 11 resource areas: noise, land use, air quality, geological resources, water resources, biological resources, cultural resources, socioeconomic resources and environmental justice, infrastructure, hazardous materials and wastes, and safety. These resources could potentially be affected by the Proposed Action and include applicable elements of the human environment that are prompted for review by Executive Order (EO), regulation, or policy.

Appendix B contains examples of relevant laws, regulations, and other requirements that are often considered as part of the analysis. Where useful to better understanding, key provisions of the statutes and EOs described in **Appendix B** will be discussed in more detail in the text of the EA.

1.4.3 Interagency and Intergovernmental Coordination for Environmental Planning, Native American Tribal Consultation, and Public Involvement

***Interagency and Intergovernmental Coordination for Environmental Planning* (*IICEP*).** NEPA requirements help ensure that environmental information is made available to the public during the decisionmaking process and prior to actions being taken. The premise of NEPA is that the quality of Federal decisions will be enhanced if proponents provide information to the public and involve the public in the planning process. The Intergovernmental Coordination Act and EO 12372, *Intergovernmental Review of Federal Programs*, require Federal agencies to cooperate with and consider state and local views in implementing a Federal proposal. Air Force Instruction (AFI) 32-7060, *Interagency and Intergovernmental Coordination for Environmental Planning*, requires the USAF to implement the IICEP process, which is used for the purpose of agency coordination and implements scoping requirements.

Through the IICEP process, Grand Forks AFB notified relevant Federal, state, and local agencies of the Proposed Action and alternatives and provided them sufficient time to make known their environmental concerns specific to the action. The IICEP process also provided Grand Forks AFB with the opportunity to cooperate with and consider state and local views in implementing the Federal proposal. Comments from North Dakota Department of Commerce, North Dakota Department of Health (NDDH), the North Dakota State Historic Preservation Office (SHPO), U.S. Fish and Wildlife Service (USFWS), and North Dakota Game and Fish were received on the Draft EA and FONSI during the review period. These comments were considered prior to a decision being made as to whether or not to sign a FONSI. IICEP materials related to this EA are included in **Appendix C**.

Native American Tribal Consultation. EO 13175, *Consultation and Coordination with Indian Tribal Governments* (6 November 2000), directs Federal agencies to coordinate and consult with Native American tribal governments whose interests might be directly and substantially affected by activities on federally administered lands. To comply with legal mandates, federally recognized tribes that are affiliated historically within the Grand Forks AFB geographic region are invited to consult on all proposed undertakings that have a potential to affect properties of cultural, historical, or religious significance to the tribes. Because many tribes were displaced from their original homelands during the historical period, tribes with cultural roots in an area may not currently reside in the region where the undertaking is to occur. Effective consultation requires identification of tribes based on ethnographic and historical data and not simply a tribe's current proximity to a project area. The tribal consultation process is distinct from NEPA consultation or the IICEP processes and requires separate notification of all relevant tribes by Grand Forks AFB. The timelines for tribal consultation are also distinct from those of intergovernmental consultations. The Grand Forks AFB Government representative point-of-contact for Native American tribes is the Installation Commander. The Grand Forks AFB Government point-of-contact for consultation with the SHPO and the Advisory Council on Historic Preservation (ACHP) is the Cultural Resource Manager.

A letter requesting consultation was sent to each affiliated tribe to describe the Proposed Action on Grand Forks AFB and ask for them to identify any potential concerns they may have (see **Appendix C**). The goal of the tribal consultation process is not to simply consult on a particular undertaking but rather to build constructive relationships with the appropriate Native American tribes. Consultation should lead to constructive dialogue in which Native American tribes are active participants in the planning process. Six comments were received by the Native American tribes affiliated with the Proposed Action during the comment review period. Five of the tribes indicated that they had no comment; the sixth tribe, the Cheyenne River Sioux Tribe, recommended having a Cultural Resource Monitor onsite during site clearing and earth-disturbance activities associated with the Proposed Action.

Public Involvement. A Notice of Availability (NOA) was published in the *Grand Forks Herald* on 4 April 2011 and the Draft EA was made available to the public for a 30-day review period. The NOA was issued to solicit comments on the Proposed Action and involve the local community in the decisionmaking process. At the closing of the public review period, no comments from the public had been received. .

1.4.4 Operation Walking Shield Requirements

Operation Walking Shield (OWS) is a unique civilian and military collaborative program that seeks integration of combined civilian and military activities through the DOD's Innovative Readiness Training (IRT) program. The IRT program uses U.S. military expertise to address the inadequate health care, infrastructure, and housing on American Indian reservations. Through IRT, OWS brings military reserve units to reservations to assist with health care and infrastructure support. IRT infrastructure projects have helped develop roads, water wells, sanitary sewers, and water utility lines to improve existing

infrastructure conditions on American Indian reservations. The OWS Program helps support cost-efficient, quality, and safe housing options while greatly reducing the demolition and waste management burden for the U.S. military.

To address the chronic overcrowding and homelessness facing American Indian reservations, OWS has provided more than 1,000 housing units to more than 6,000 American Indians on numerous reservations in Montana, North Dakota, South Dakota, and Minnesota. This has been done in collaboration with the USAF. In the past, excess housing units from Grand Forks AFB, Minot AFB, and Malmstrom AFB have been donated to local American Indian reservations through OWS's Housing Relocation Program (OWS 2010).

As part of the Northern Group MHPI, the USAF will seek to collaborate with the OWS Program to the maximum extent practicable by offering to donate MFH units scheduled for demolition to the OWS Program first in lieu of them being taken to a local landfill. If the OWS Program decides to accept any MFH units scheduled for demolition, the OWS program would remove and transport these MFH units to the appropriate American Indian Reservation at no cost to the USAF.

1.5 Organization of this Document

This EA is organized into six sections. **Section 1** provides the purpose of and need for the Proposed Action. **Section 2** contains a description of the Proposed Action, alternatives to the Proposed Action, and No Action Alternative. **Section 3** contains a general description of the physical resources, baseline conditions that could potentially be affected by the Proposed Action, the alternatives, and the No Action Alternative; and presents an analysis of the potential environmental consequences of implementing the Proposed Action, the alternatives, or the No Action Alternative. **Section 4** includes an analysis of the potential cumulative impacts at Grand Forks AFB. **Section 5** lists the preparers of the document. **Section 6** lists the references used in the preparation of the document. **Appendix A** contains the text of the MHPI as codified in 10 U.S.C. 2871–2885. **Appendix B** contains applicable laws, regulations, policies, and planning criteria potentially relevant to the NEPA analysis. **Appendix C** includes all IICEP, Native American tribal consultation, and public involvement correspondence. **Appendix D** contains a list of all the desired features for privatization of MFH at Grand Forks AFB. **Appendix E** provides representative photographs of MFH areas at Grand Forks AFB. **Appendix F** includes air emissions calculations. **Appendix G** contains a list of species of conservation priority observed on the installation.

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2. Description of the Proposed Action and Alternatives

This section presents information on the USAF's Housing Privatization Program and the Proposed Action under that initiative. **Section 2.1** describes how the Proposed Action would be implemented at Grand Forks AFB and **Section 2.2** identifies alternatives to the Proposed Action, including the No Action Alternative. Implementation of the Proposed Action, as described in **Section 2.1,** is Grand Forks AFB's Preferred Alternative.

2.1 Detailed Description of the Proposed Action

Consistent with the USAF Housing Privatization Program, Headquarters AMC proposes to convey 833 MFH units, lease three parcels of land (Parcel 1 [325.44 acres], Parcel 2 [74.97 acres], and Parcel 3 [1.29 acres]), and transfer responsibility for providing housing and ancillary supporting facilities at Grand Forks AFB to the PO. Upon successful completion of the demolition of 286 units, Parcel 2 would be returned to the Government and the lease of this parcel would be terminated.

Existing MFH units at Grand Forks AFB are organized within 12 neighborhoods. These neighborhoods are Beech, Holly, Lewis & Clark Trail, Prairie View Court, Redwood, Sunflake, Dakota Skies, Meadowlark Manor, Northern Lights Estates, Red River Crossing, Roughrider Way, and Whitetail Range (GFAFB 2008a, MWH 2010). **Figure 2-1** shows the locations of the 12 existing MFH neighborhoods. **Appendix E** shows photographs of representative MFH areas at Grand Forks AFB.

As of the 2007 Housing Requirements and Marketing Analysis[1] (HRMA), there were 1,462 MFH units on Grand Forks AFB. Since 2007, Grand Forks AFB has demolished 629 inadequate MFH units in the following neighborhoods: Beech (all MFH units), Redwood (all MFH units), the western half of Lewis & Clark Trail, the northern portion of Red River Crossing, the northern portion of Roughrider Way, the eastern half of Meadowlark Manor, and Sunflake (all MFH units). In addition, 218 housing units (east side of Prairie View Court) were removed and transferred to Native American Tribes (e.g., Fort Berthold, Turtle Mountain, and Sisseton) in 1998 and 1999, 18 units in the Redwood neighborhood were removed and transferred to OWS in 2005, and 34 housing units (16 duplexes and 2 singles) in the former March neighborhood (now part of Meadowlark Manor) were removed and transferred to OWS in 2009. The potential impacts of these actions were addressed in previously prepared EAs or Categorical Exclusions (CATEXs) and associated Environmental Baseline Surveys (EBSs).

Appendix A contains the MHPI on which the USAF Housing Privatization Program and the Proposed Action are based. Application of provisions of the USAF Housing Privatization Program would be tailored to Grand Forks AFB's specific circumstances and requirements.

Under the Proposed Action, Grand Forks AFB would execute agreements with the PO to convey real property, lease land, and have the PO assume responsibility to operate a rental housing development for the benefit of USAF and other personnel. Under agreements with Grand Forks AFB, the PO would be responsible to plan, design, develop, renovate, demolish, construct, own, operate, maintain, and manage all necessary assets for MFH and designated ancillary supporting facilities. Additionally, the PO would be required to implement and follow appropriate environmental management laws, efforts, and plans regarding resources including land, soil, water, air, vegetation, hazardous materials and wastes, and cultural resources. The PO would be responsible for ensuring that maintenance of conveyed areas complies with all provisions of the installation's Integrated Natural Resources Management Plan (INRMP) and Integrated Cultural Resources Management Plan (ICRMP) and any future modifications

[1] DOD guidance states that the local community should be the first source for satisfying the demand for housing generated by military families. The HRMA identifies current and projected supply and demand for family housing and analyzes the local housing market to determine its ability to provide suitable housing for military personnel.

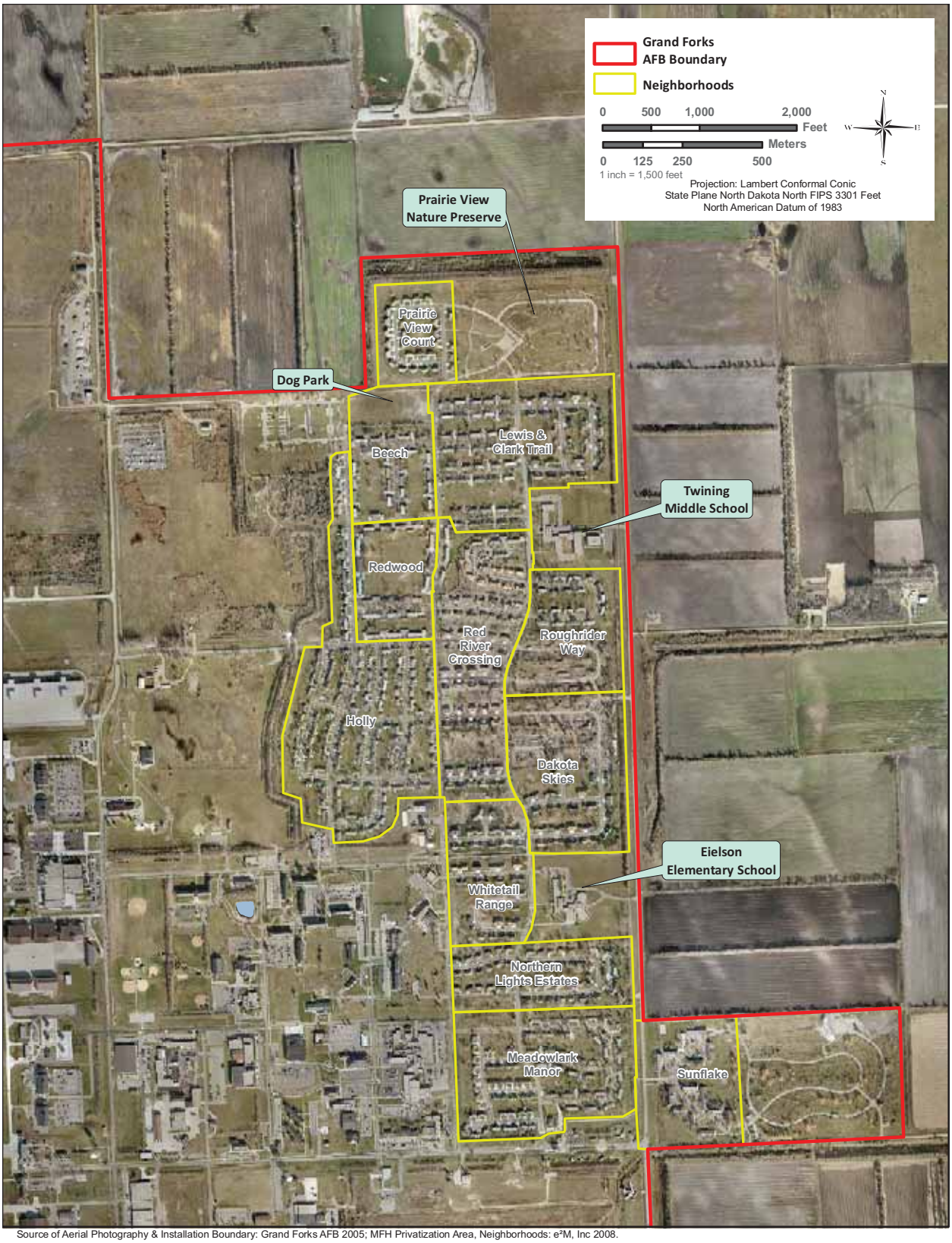
thereof. The Government retains the right and responsibility to access and manage those natural and cultural resources covered by such plans. In addition, the Ground Lease would: (a) restrict the PO from taking any action that would be inconsistent with the applicable INRMP and ICRMP; and (b) allow the Government to access the conveyed land to manage the natural and cultural resources covered by such plans, at the Government's expense, except when the Government incurs expenses resulting from the PO's maintenance activities that do not comply with the INRMP or ICRMP requirements. The PO would not take any action that interferes with the USAF's preservation efforts under the current INRMP.

In exchange for providing housing, the PO would be entitled to rental income based on each occupant's Basic Allowance for Housing (BAH).

There are 833 existing MFH units on Grand Forks AFB, and the installation believes 547 of these units are currently adequate in their present condition. The 2007 HRMA projection for FY 2012 identified the need for an end-state of 274 MFH units. However, this projection for the need for 274 MFH units by the HRMA took into account the loss of the existing tanker mission on Grand Forks AFB but did not take into account the subsequent acquisition of the Predator/Global Hawk aircraft mission. Based on this updated information, it is currently estimated that the end-state requirement would be for 547 MFH units (GFAFB 2008b). This leaves 286 MFH units as either in excess of projected needs or currently in a substandard condition. These 286 units in the Holly neighborhood would be demolished by the PO under the Proposed Action (MWH 2008). The remaining 547 units would be left "as is" and would require maintenance and upgrades over the course of the 50-year lease. **Figure 2-2** shows the ongoing and proposed actions for the northern portion of MFH. **Figure 2-3** shows the ongoing and proposed actions for the southern portion of MFH. **Figure 2-4** shows the end-state of MFH after privatization.

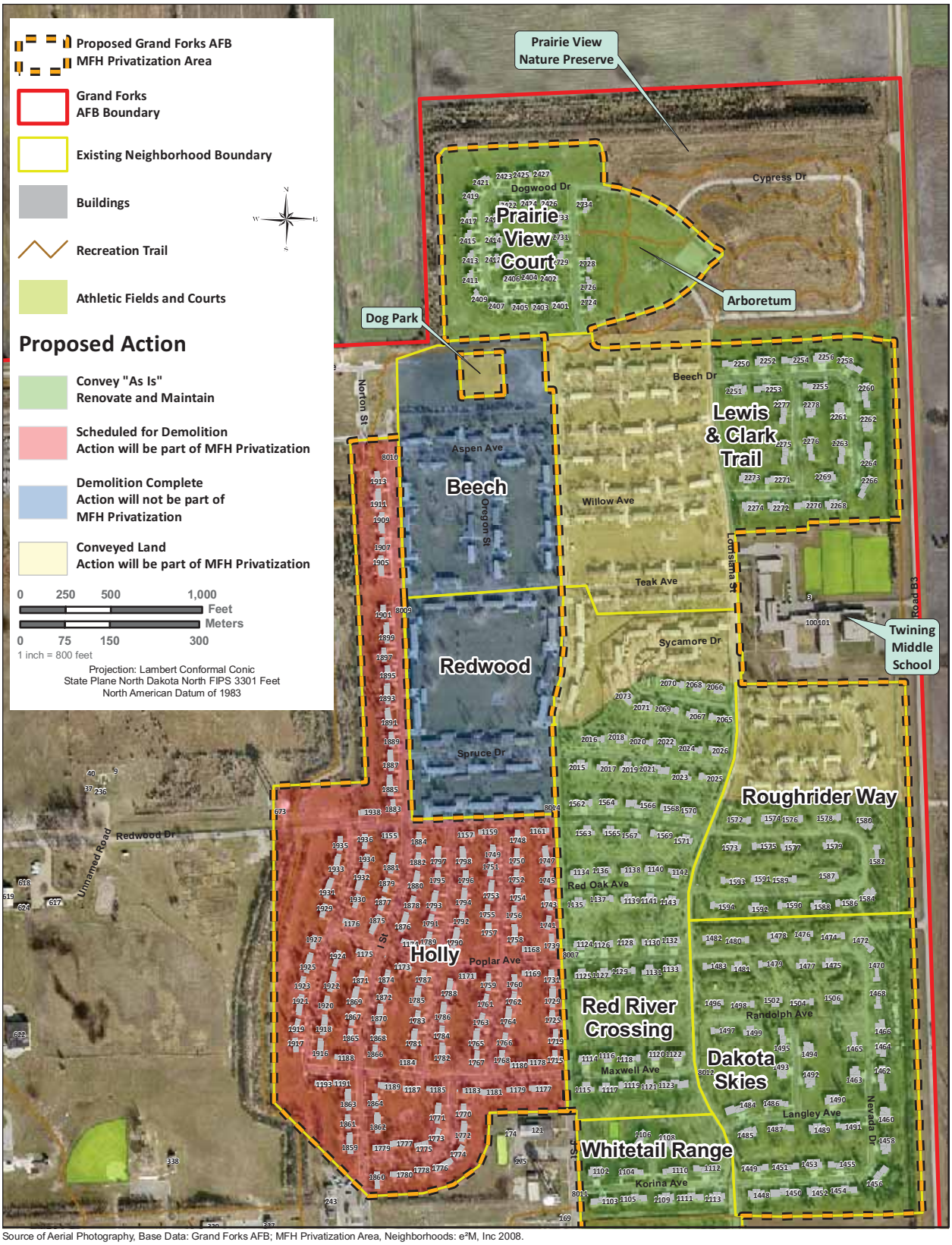
Specific transactions that would occur between Grand Forks AFB and the PO as part of the Proposed Action are as follows:

- Grand Forks AFB would convey 833 MFH units to the PO.
- Grand Forks AFB would grant 50-year leases for two parcels of land: Parcel 1 (325.44 acres) consists of MFH neighborhoods and Parcel 3 (1.29 acres) consists of a dog park (refer to **Figure 2-3** for proposed MFH privatization boundaries). All areas being privatized would be maintained and used in compliance with the most current Grand Forks AFB INRMP. In addition, the existing Holly neighborhood boundaries would be modified by removing a small portion of undeveloped land on the western and northern border of that neighborhood.
- Grand Forks AFB would grant up to a 6-year lease for one parcel of land: Parcel 2 (74.97 acres) consists of the Holly neighborhood. All housing units and associated infrastructure are scheduled for demolition in accordance with regulatory and USAF requirements. Although 15 buildings (30 MFH units) of the 286 units were renovated in 2004, they are considered surplus and are proposed for demolition. Upon successful completion of the demolition of the 286 surplus, inadequate units in the Holly neighborhood, Parcel 2 would be returned to the Government and the lease of this parcel would be terminated.



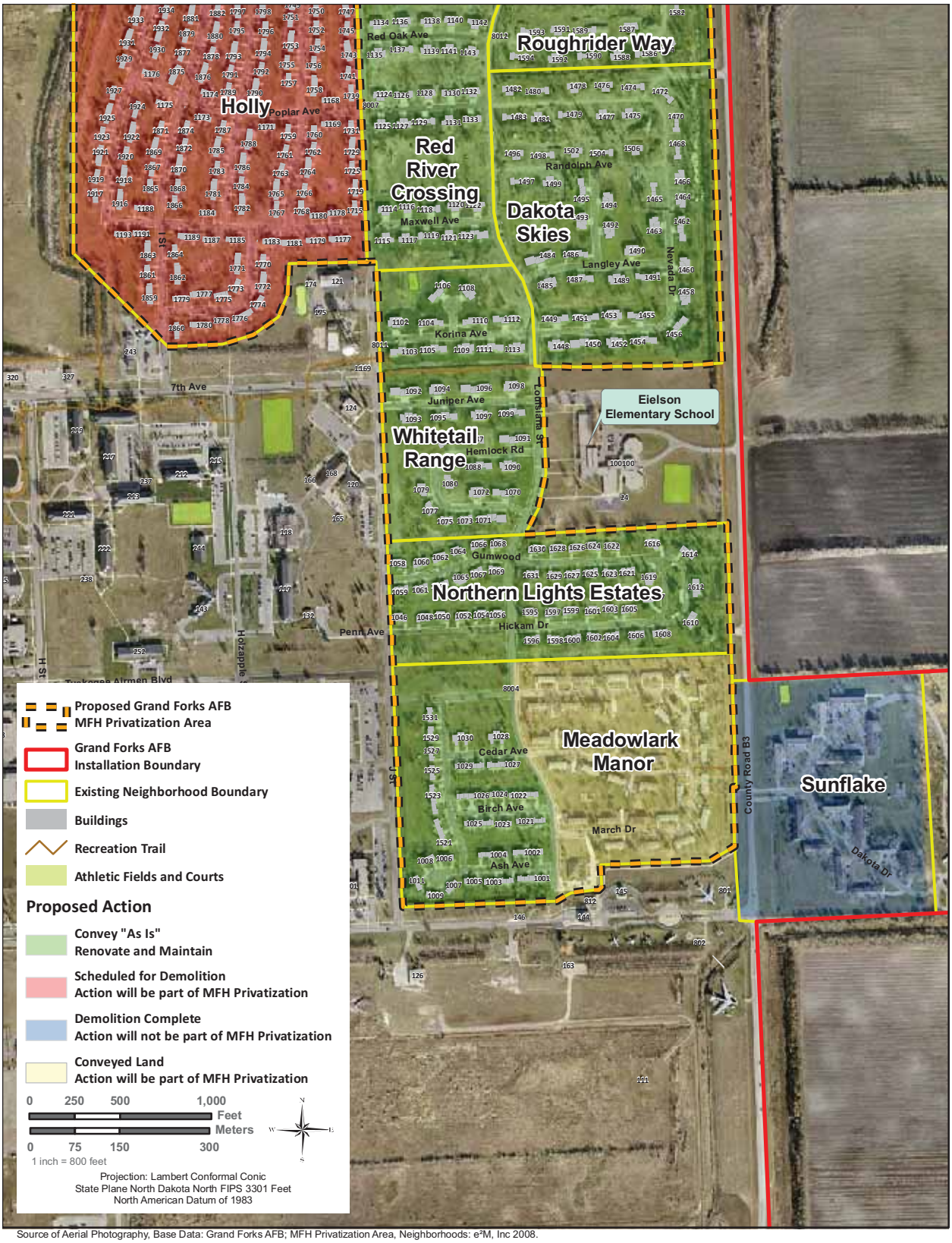
Source of Aerial Photography & Installation Boundary: Grand Forks AFB 2005; MFH Privatization Area, Neighborhoods: e²M, Inc 2008.

Figure 2-1. Existing Grand Forks AFB MFH Area and Neighborhoods



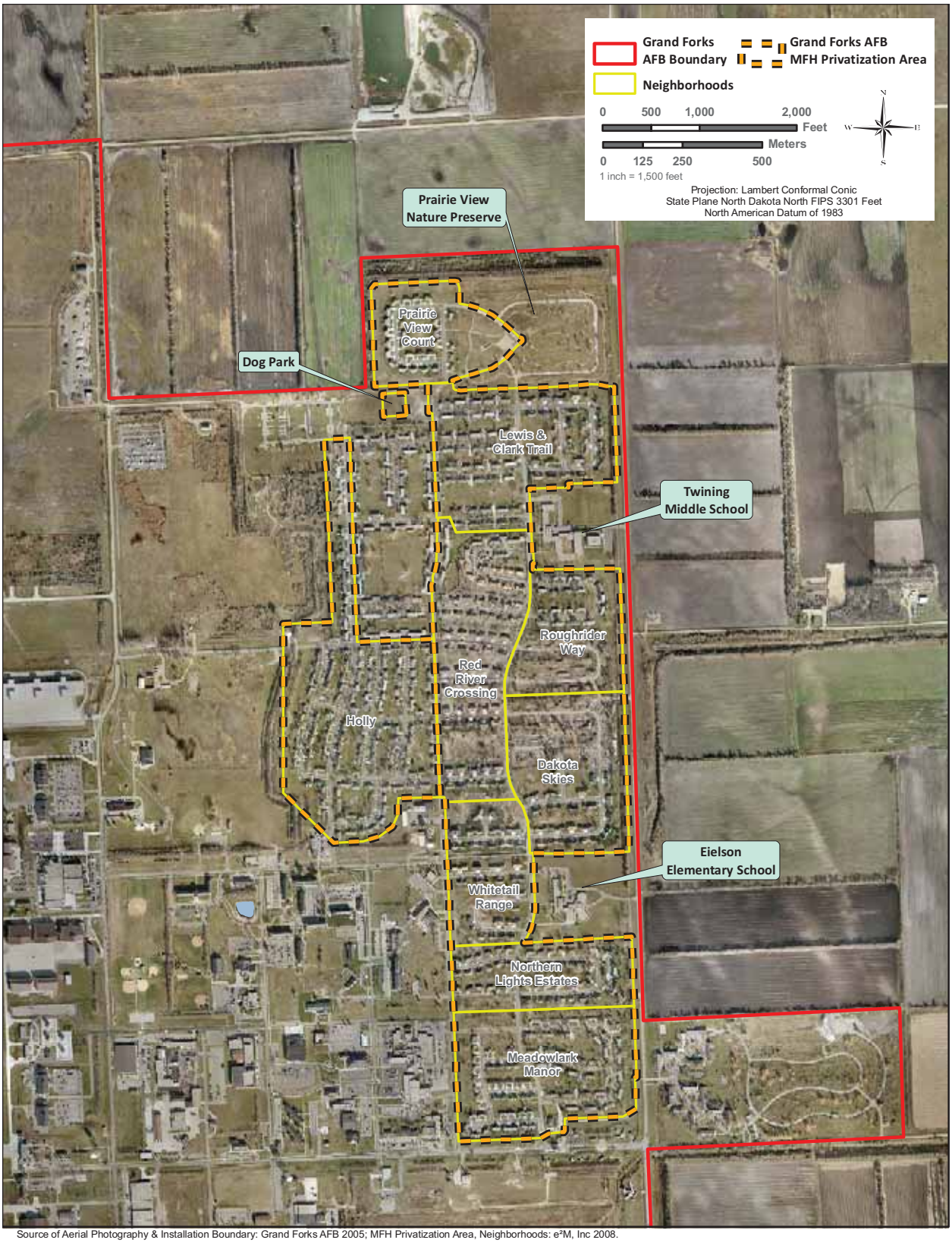
Source of Aerial Photography, Base Data: Grand Forks AFB; MFH Privatization Area, Neighborhoods: e²M, Inc 2008.

Figure 2-2. Proposed Actions in Northern Portion of MFH



Source of Aerial Photography, Base Data: Grand Forks AFB; MFH Privatization Area, Neighborhoods: e²M, Inc 2008.

Figure 2-3. Proposed Actions in Southern Portion of MFH



Source of Aerial Photography & Installation Boundary: Grand Forks AFB 2005; MFH Privatization Area, Neighborhoods: e²M, Inc 2008.

Figure 2-4. End-State of MFH after Privatization

The PO would continue use of 547 units in their present condition. No new unit construction is anticipated. However, the USAF Housing Privatization Program has identified several desired features for new construction and renovation of MFH, its privatized communities, facilities maintenance, and property management for Grand Forks AFB to include construction of a community center/clubhouse with indoor playground and splash park and storage facilities within Parcel 1. For the purposes of this EA, it is assumed that construction of the center/clubhouse with indoor playground and splash park and storage facilities would occur as part of the Proposed Action.

- Tot lots, playgrounds, bus stops, common mailbox clusters, and the housing office (Building 119) would be conveyed to the PO. The housing maintenance facility, existing sports fields adjacent to the schools, two schools (Twining Middle School and Eielson Elementary School), Building 1336 (wastewater lift station), Building 1146 (back-up power generation system), and the Prairie View Nature Preserve (PVNP) on Grand Forks AFB would not be conveyed to the PO.
- The PO would be responsible for ensuring that maintenance of conveyed areas complies with all provisions of the installation's INRMP and ICRMP and any future modifications thereof. The Government retains the right and responsibility to access and manage those natural and cultural resources covered by such plans.

Table 2-1 indicates the actions that would be taken with respect to the current MFH inventory and other lands to be conveyed as part of the Proposed Action. The actions presented in **Table 2-1** represent a combination of demolition, renovation, and maintenance that would produce the end-state inventory of 547 MFH units.

Some actions shown in **Table 2-1** are ongoing and some would be done at various times within the first 6 years of the 50-year privatization program. For the purpose of analysis in this EA, it is assumed that demolition and renovation activities would occur evenly over the 6 years of the transition period.

As part of the Proposed Action, the PO is responsible for demolishing the 286 housing units in the Holly neighborhood in accordance with regulatory and USAF requirements. As part of this demolition, the PO would demolish housing foundations, demolish pavements, cap utilities, grade the project area for proper drainage, and seed all areas not scheduled for future development. Some of the MFH units scheduled for demolition might be desired by the OWS program or other similar programs and could be transferred to nearby localities. The responsibility to demolish or remove the identified MFH units from Grand Forks AFB would be the PO's and any interface with the OWS programs would not affect the length of the initial development period. If the OWS program requests to acquire any MFH scheduled for demolition, the units would be transported off the installation using OWS program assets. However, the PO would be responsible for demolition of foundation concrete slabs, utilities, and other items required to complete the cleanup of the project area to include restoring the area with appropriate vegetation as approved by the installation.

The PO would remove all aboveground utilities within the leased MFH privatization area. Underground utility mains scheduled for demolition could be capped at the main and abandoned in place; however, the PO would remove all utility lines connected to the main utility line (laterals). In addition, the PO would remove all roadways and fences in areas scheduled for demolition.

The PO would be responsible for maintaining the electrical, natural gas, water, and sewer utilities from each MFH unit to the point of demarcation (POD) as specified in the lease agreement. The USAF would retain ownership of the utility systems, including overhead and underground distribution lines and primary and secondary lines. Telephone, network, and cable television distribution systems would not be conveyed to the PO.

Table 2-1. Actions Taken and Proposed for Existing Military Family Housing Areas

Parcel	Housing/ Privatization Area	Acreage	Proposed Action	Proposed Lease Term
Not Applicable	Beech	25.62	Demolition complete. Area would not be part of MFH privatization.	Not Applicable. Beech would not be included in MFH privatization.
Not Applicable	Sunflake	32.53	Demolition complete. Area would not be part of MFH privatization.	Not Applicable. Sunflake would not be included in MFH privatization.
Not Applicable	Redwood	23.27	Demolition is complete. Area would not be part of MFH privatization.	Not Applicable. Redwood would not be included in MFH privatization.
1	Lewis & Clark Trail	57.18	Western portion demolition complete and land would be conveyed. Eastern portion would be conveyed "as is" and units would be renovated and maintained by the PO.	50 years.
1	Prairie View Court	28.13	Convey "as is" and units would be renovated and maintained by the PO.	50 years.
1	Dakota Skies	43.70	Convey "as is" and units would be renovated and maintained by the PO.	50 years.
1	Meadowlark Manor	52.84	Eastern portion has been demolished and land would be conveyed. Western portion would be conveyed "as is" and units would be renovated and maintained by the PO.	50 years.
1	Northern Lights Estates	29.84	Convey "as is" and units would be renovated and maintained by the PO.	50 years.
1	Red River Crossing	53.51	Northern portion has been demolished and land would be conveyed. Southern portion would be conveyed "as is" and units would be renovated and maintained by the PO.	50 years.

Parcel	Housing/ Privatization Area	Acreage	Proposed Action	Proposed Lease Term
1	Roughrider Way	31.16	Northern portion has been demolished and land would be conveyed. Southern portion would be conveyed "as is" and units would be renovated and maintained by the PO.	50 years.
1	Whitetail Range	29.08	Convey "as is" and units would be renovated and maintained by the PO.	50 years.
2	Holly	81.61 (Existing)/ 74.97 (Proposed)	The PO would demolish all 286 MFH units and associated infrastructure and revegetate the area as part of MFH privatization.	Lease up to 6 years.
3	Dog Park	1.29	Land and associated infrastructure would be conveyed "as is." This area must be managed and maintained in accordance with the lease agreement with the PO.	50 years.

Proposed Action	Acreage	MFH Units
Total to Be Conveyed	**401.70**	**833**
Total End-State	**326.73**	**547**

Because there are no active landfills on Grand Forks AFB, all construction and demolition (C&D) debris created from construction, demolition, and renovation activities would be handled, maintained, transported, and delivered by the PO to a state-permitted landfill off the installation in accordance with applicable Federal, state, and local laws. Permitted landfills in the vicinity of Grand Forks AFB that could be used by the PO include the Grand Forks Municipal Landfill and the Berger Landfill.

The USAF Housing Privatization Program has identified several desired features for new construction and renovation of MFH, its privatized communities, facilities maintenance, and property management for the Northern Group installations (i.e., Grand Forks AFB, North Dakota; Cavalier AFS, North Dakota; Ellsworth AFB, South Dakota; Minot AFB, North Dakota; Mountain Home AFB, Idaho; and Cannon AFB, New Mexico). These desired features are intended to result in substantial improvements in the overall quality of housing for qualified personnel. Desired features for Grand Forks AFB could include construction of a community center/clubhouse with indoor playground and splash park and storage facilities within Parcel 1. The required and desired features for MFH for new housing and renovations are provided in **Appendix D**.

2.1.1 Operational Provisions

The following paragraphs identify relevant matters pertaining to the proposed privatization of MFH.

Transition Plan. Implementation of the Proposed Action would include reliance on a transition plan prepared by the PO and approved by Grand Forks AFB. The plan would include project development,

phasing out of existing units, the means by which the PO would maintain availability of MFH units for qualifying personnel, and the methodology for providing utilities and services during and after the transition period. The transition period would begin upon completion of contractual matters initiating the Proposed Action and would last for up to 6 years. During the transition period, the number of available MFH units would be gradually reduced from 833 to 547 units, but at no time would there be fewer than 547 units available. At all times during the transition period, sufficient numbers of units for all eligible pay grades would be maintained.

Lease of Land. The USAF would grant the PO a lease of approximately 401.70 acres, as described in **Section 2.1**. Upon successful completion of the demolition of 286 surplus, inadequate units, Parcel 2 (74.97 acres) would be returned to the Government and the lease of this parcel would be terminated, resulting in an end-state of 326.73 acres. Leasing of the parcels would be subject to several conditions imposed by the USAF. The lease would be subject to all existing easements, or those subsequently granted, as well as established access routes for roadways and utilities located, or to be located, on the premises. The lease would do the following:

- Prohibit the PO from storing hazardous wastes (above those quantities generated in routine operations that are immediately disposed of) or taking any actions that would cause irreparable injury to the land. The PO would be required to comply with all Federal, state, interstate, and local applicable laws, regulations, conditions, or instructions affecting its activities. The USAF would include clauses in the lease permitting the USAF to conduct periodic inspection of the property to ensure its safe condition and its proper use in accordance with the terms of the lease.
- Prohibit operation by the PO of satellite hazardous waste accumulation sites on Grand Forks AFB. The PO would be responsible for appropriate storage and disposal of hazardous waste and universal waste (e.g., fluorescent bulbs, batteries, thermostats). The PO would be responsible for any environmental fines or penalties arising from accidental, negligent, or intentional acts on the property. The PO would be responsible for the costs of disposing of solid waste generated by the MFH construction and demolition activities and subsequent housing use. Solid waste generated would be disposed of off-installation at the PO's expense. Recycling materials such as paper, cardboard, glass, and plastic would be collected and recycled at an off-installation facility per Grand Forks County and Grand Forks Landfill regulations.
- Prohibit the use of asbestos or asbestos-containing material (ACM) or lead-based paint (LBP) in the construction of new facilities.
- Prohibit discharge of waste or effluent from the premises in such a manner that the discharge would contaminate streams or other bodies of water or otherwise become a public nuisance.
- Prohibit removal or disturbance of, or causing or permitting such, any historical, archaeological, architectural, or cultural artifacts, relics, remains, or objects of antiquity. In the event such items should be discovered, the PO would be required to notify the installation commander or his designated representative and immediately protect the site and the material from further disturbance.
- Require maintenance of all soil, water, vegetation, and designated natural resources areas using appropriate measures to prevent or control soil erosion, spread of noxious weeds, and spread of infectious vegetation diseases such as Dutch elm disease and the emerald ash borer within the installation. These measures would be addressed in permits (e.g. Clean Water Act [CWA] Section 404 permit), the installation's INRMP, Integrated Cultural Resources Management Plan (ICRMP), P.L. 93-629 (noxious weed control), and in storm water pollution prevention plans (SWPPPs). The PO would be required to comply with all applicable permits, including the storm water permit and accompanying SWPPP.

- Prohibit the cutting and sale of timber by the PO; prohibit mining operations and the removal of sand, gravel, or like substances from the ground. Tree resources, including urban landscaped trees, shrubs and other natural vegetation, are owned by the USAF and are not conveyed to the PO. Removal of trees or other natural resources must comply with the law and the installation's most current INRMP.

Federal laws, regulations, and EOs, such as the CWA; Endangered Species Act (ESA); Archaeological Resources Protection Act; EO 11988, *Floodplain Management*; and EO 11990, *Protection of Wetlands*, continue to be applicable and enforced by the USAF on the leased property. Potentially applicable laws, regulations, and EOs are summarized in **Appendix B**.

Conveyances. A total of 833 MFH units and 401.70 acres of land would be initially conveyed to the PO. Within the 6-year transition period, 286 surplus, inadequate MFH units would be demolished in Parcel 2 and the parcel would be returned to the Government, resulting in an end-state conveyance of 547 MFH units and 326.73 acres of land. The USAF would convey this property with encumbrances, notices, and requirements obligating the PO to certain actions. To support the data collection process relevant to the Proposed Action, the USAF has completed an EBS to determine the location and extent of possible contamination from underground storage tanks (USTs) or other sources (GFAFB 2009a). The USAF has identified any easements and rights-of-way that might affect the PO's use of conveyed property.

Barrier-free Design. New MFH and ancillary supporting facilities must adhere to the *Uniform Federal Accessibility Standards* and the *Americans with Disabilities Act Accessibility Guidelines* promulgated by the Access Board (formerly known as the Architectural and Transportation Barriers Compliance Board) pursuant to the Architectural Barriers Act of 1968, Rehabilitation Act of 1973, and Americans with Disabilities Act of 1990. These standards require that at least 5 percent of new MFH units be designed and built to be accessible, or easily modifiable for access, by persons with physical disabilities.

Construction and Demolition Standards. Demolition, construction, and renovation standards reflect consideration of City of Grand Forks, Grand Forks County, and State of North Dakota building codes, standards, and regulations. If units are constructed in the future, construction of MFH units would be based on sustainable design and development concepts and would seek to incorporate consideration of matters such as sustainable sites, water efficiency, energy and atmosphere, materials and resources, and indoor environmental quality. Design, materials, equipment, and construction methods would reduce energy and water consumption to current Energy Star[2] criteria. Design features would include optimizing glass locations and areas; optimizing insulation in exterior walls, ceilings, and between adjoining units; weatherstripping throughout; and minimizing duct leakage. Attention to construction details, exterior fenestration materials, and passive solar energy systems would be employed whenever possible. The PO would ensure that materials, equipment, and finishes would be durable, low-maintenance, and functional. These measures would improve environmental and economic performance of facilities through the use of established and advanced industry principles, practices, materials, and standards. In accordance with EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, the PO would consider recycled products and environmentally preferable purchasing criteria developed by the U.S. Environmental Protection Agency (USEPA).

A Demolition Plan would be established and implemented as part of the overall Construction Management Plan. The Demolition Plan would provide a phased approach for the demolition of existing units, appurtenances, and infrastructure. Underground utility mains scheduled for demolition could be

[2] The U.S. Environmental Protection Agency and U.S. Department of Energy promote the use of energy-efficient equipment by awarding the Energy Star label to products that save energy. The agencies set energy-efficiency criteria for specific consumer and commercial products. Energy Star products include appliances (e.g., refrigerators, dishwashers, and room air conditioners) and residential HVAC equipment (e.g., programmable thermostats, boilers, furnaces, heat pumps, and central air conditioners).

capped at the main and abandoned in place; however, the PO would remove all laterals. The contractor is responsible for conducting ACM and LBP inspections prior to demolition or construction activities, and would be responsible for handling any ACM and LBP in accordance with applicable laws, including removal, disposal, and abatement. An asbestos disposal plan would identify the proposed disposal site for any ACM. After demolition is complete (including facilities, utilities, and roads and fences, as appropriate), the PO would grade the land for proper drainage and seed all areas where new construction is not planned. The PO would handle, maintain, and transport all debris to a Government-approved landfill site in accordance with applicable Federal, state, and local laws. Selling or recycling demolition debris would be pursued where possible.

The Demolition Plan should consider the removal of trees and other vegetation required during demolition. Landscaped trees and other vegetation should be replaced with similar species as coordinated with the installation. Trees are natural resources owned by the USAF. Removal or sale of timber is prohibited by the PO and must be coordinated with the installation.

Operation and Maintenance. The PO would operate and maintain for 50 years all existing and new MFH units and ancillary supporting facilities, including associated parking lots and sidewalks, in accordance with the quality standards established in privatization program agreements. At Grand Forks AFB's option, the installation may extend the period of operation and maintenance and the leases of land supporting MFH for an additional 25 years.

Rental Rates and Payments. The rental rate charged by the PO would not exceed a military occupant's BAH. Grand Forks AFB would continue to categorize MFH by grade group. Unit rents would be fixed by type of unit. Like BAH, rent would be paid in arrears.

Utilities. The PO would pay all utility costs until utility meters are installed on each housing unit. Until meters are installed on each unit, the military member would surrender his or her entire BAH for rent and utilities. No later than the end of the Transition Period (approximately 6 years), the PO must have individual meters installed on the end-state units. The PO would then establish a fixed rent for those units at an amount not to exceed the BAH rate minus an amount sufficient to cover 110 percent of estimated average reasonable utility charges at the dependent rate of the military grade that the unit is designated for, in accordance with the Project Development Demographics. The PO would pay for all water, sewer, and refuse collection services, including curbside recycling pickup, throughout the duration of the privatization agreement.

Occupancy Guarantee. Grand Forks AFB would not guarantee the level of occupancy of MFH by military members. The Grand Forks AFB Housing Office would provide "Referral Tenants." All military personnel assigned to the local area would be required to process through the Grand Forks AFB Housing Office upon arrival prior to signing a lease for housing. Freedom of housing choice would be preserved. The PO would compile and maintain a waiting list. After the transition period, if vacancy rates exceed 5 percent, the PO may immediately rent to other active-duty members of the uniformed services and their families. If vacancy rates exceed 5 percent for more than 30 consecutive days, the PO may rent to Federal civil service, retired military members, and retired Federal civil service and their families. If vacancy rates exceed 5 percent for more than 60 consecutive days, the PO may rent to DOD contractor permanent employees (U.S. citizens) and their families. If vacancy rates exceed 5 percent for more than 90 consecutive days, the PO may rent to the general public with a written notice to the Government. Should this type of situation arise, the PO would be allowed to fill only the number of rental units necessary to bring the vacancy rate to 5 percent. Offering of vacant units to other eligible tenants would be based on a priority list. Other eligible tenants would include (listed in descending order of priority):

- Other active-duty military members and families (including unaccompanied military members)
- Federal civil service employees
- Retired military members and families
- Guard and Reserve military members and families
- Retired Federal civil service employees
- DOD contractor or permanent employees (U.S. citizens)
- Members of the general public (with prior written notice to the Government).

Jurisdiction. Legal jurisdiction of neighborhoods at Grand Forks AFB is under proprietary jurisdiction. The term "proprietary jurisdiction" is applied when the Federal government reserves the right to change the jurisdiction of the leased parcels at any time. Such change would not be the basis for a claim by the PO for property taxes or other costs.

Municipal Services. Grand Forks AFB would provide fire, law enforcement services, and other emergency services provided to the MFH area. The level of service would include emergency response and force protection. The PO would reflect these costs in its operating budget and reimburse the installation's service agency for all actual costs incurred for this level of service.

2.2 Alternatives to the Proposed Action

AMC has identified three alternatives to the Proposed Action, and the No Action Alternative. These alternatives are presented in the following subsections.

2.2.1 Alternatives for Family Housing

2.2.1.1 The Partial Privatization Alternative

Under this alternative, Grand Forks AFB would privatize only a portion of the installation's MFH inventory. Family housing in good condition (not needing demolition or renovation) would remain subject to USAF management for maintenance and operational control.

Privatization of only a portion of Grand Forks AFB's MFH inventory would have several substantial drawbacks. First, the condition of the MFH retained by the USAF would change over time, resulting in a need for its renovation or replacement. Failure to include the entire inventory of housing in the privatization transaction would only delay action to provide adequate housing for airmen and their dependents. Second, two management regimes (the USAF's and the PO's) would not be as cost-effective as one. From a private developer's perspective, maximum potential cash flow is important to support development and operation of the ancillary supporting facilities desired by the installation, activities that traditionally do not provide independent sources of revenue to sustain them. Together, these factors render consideration of partial privatization at Grand Forks AFB not feasible and, therefore, such an alternative will not be further evaluated in detail in the EA.

2.2.1.2 The Private Sector Reliance Alternative

Under this alternative, Grand Forks AFB would rely solely on the private sector to meet the housing needs of personnel assigned to the installation. The installation would terminate MFH programs, dispose of existing MFH units, and convert the land now supporting neighborhoods to other uses.

The alternative is premised, in part, on the view that competitive marketplace forces would lead to the creation of sufficient affordable, quality MFH. Data vary, but, in general, experience has shown that

military members and their families living off-installation must cover between 15 and 20 percent of their costs out-of-pocket. Moreover, living on-installation has several intangible benefits to military members and their families. These include camaraderie and esprit de corps among the military personnel, a sense of "family" among dependents (especially during military deployments), proximity to the workplace (thereby avoiding lengthy commutes), and each military member's peace of mind in knowing that his or her dependents are residing in a safe community while they are deployed or serving on temporary duty at a distant location.

As a practical matter, termination of Grand Forks AFB MFH would prove difficult. If MFH were to be terminated over a period of years, without maintenance funding, the existing housing would become unsuitable because of age or necessity of repairs. Residents could then find themselves living in blighted and partially abandoned neighborhoods. If MFH were to be terminated at once, it is unlikely that the private sector could provide the requisite amount of affordable, quality housing units, as well as schools, shops, roads, and other support amenities, on short notice.

Termination of MFH programs would involve abandonment of immense investments in those facilities. The various consequences of reliance on the private sector and the management difficulties of effecting termination of USAF MFH would prove challenging. In light of the aggregate value of MFH units amenable to continued use with only minor renovations, termination of a family housing construction and maintenance program would gravely contravene the fiscal responsibilities that the U.S. Congress expects of the USAF. For these reasons, this alternative is not reasonable and will not be further evaluated in detail in the EA.

2.2.1.3 The Leasing Alternative

Statutory authorities exist for Grand Forks AFB to ensure availability of adequate, affordable housing through use of long-term leases of housing for military family use. Key aspects of the two laws providing these authorities are summarized below.

- *Long-term leasing of military family housing to be constructed.* Family housing obtained through use of this authority, which appears at 10 U.S.C. 2835, is most often referred to as "Section 801 housing." Under this authority, the USAF may, through competitive contract procedures, have a developer build or renovate (to residential use) family housing units near an installation. Housing units under this authority must meet DOD specifications. The USAF may then lease the units for use as MFH for a period of not more than 20 years. At the end of the lease term, the USAF has the option to purchase the leased MFH units.
- *Military housing rental guarantee program*. Family housing obtained through use of this authority, which appears at 10 U.S.C. 2836, is most often referred to as "Section 802 housing." Under this authority, the USAF may award a competitive contract to a private developer or a state or local housing authority to construct or rehabilitate housing on or near an installation having a shortage of housing for personnel with or without accompanying dependents. The USAF contractually guarantees the occupancy levels of the housing units, at rental rates comparable to those for similar units in the same general market. Housing units under this authority must comply with DOD specifications or, at the discretion of the Service secretary, local building codes. A rental guarantee agreement may not exceed 25 years in duration; it may be renewed only for housing on Government-owned land. The agreement may provide that utilities, trash collection, and entomological services be furnished by the USAF at no cost to the occupant to the same extent such services are provided to occupants of on-installation MFH.

USAF-wide, there has been only limited experience with either of the foregoing authorities. An important drawback associated with the Section 801 and Section 802 housing programs is related to what is known as budget "scoring," the method of accounting for Federal government obligations as required by the Budget Enforcement Act of 1990. Scoring ensures that all government obligations are accounted for when long-term liability is incurred (during the first year of a project). Scoring guidelines issued by the Federal Office of Management and Budget require that a project be fully funded with sufficient budget authority in its first year to cover the Government's long-term commitment. In other words, all potential costs associated with long-term leasing or rental guarantee programs must be recognized in the first year, and they must be considered part of the USAF's total obligation authority (the total monies appropriated by Congress for use by the USAF in a given year). For some privatization projects, such as military-leased housing, the USAF's obligations for scoring purposes amount to the net present value of the total rent under the lease. These amounts can be nearly as great as the sums required under traditional military construction financing for USAF-initiated construction of similar facilities.

The Section 801 housing program and the Section 802 rental guarantee program only partially address the purpose of and need for the Proposed Action. Because of the scoring guidelines, the USAF would obtain very little or no leverage benefit.

The enactment of new authorities in the MHPI suggests Congress's recognition that the drawbacks of Section 801 and Section 802 outweigh the potential benefits to the USAF. Although use of the authorities in either Section 801 or Section 802 or both would be possible, their use would not be reasonable when compared with the greater flexibility and economic advantages of the new authorities offered by the MHPI to the USAF and its members' families. Accordingly, this alternative will not be further evaluated in detail in the EA.

2.2.2 The No Action Alternative

CEQ regulations require inclusion of the No Action Alternative. The No Action Alternative serves as a baseline against which the impacts of the Proposed Action and alternatives can be evaluated. Under the No Action Alternative, Grand Forks AFB would not implement the Proposed Action. Grand Forks AFB would continue to provide for the housing needs of military personnel and family members.

Grand Forks AFB has 547 MFH units that have been constructed within the past 10 years. It is anticipated that these 547 MFH units would continue to provide adequate housing for many years into the future with only minor maintenance and repairs.

The remainder of the MFH units (286 units) would also continue to be used. Although 30 units were renovated in 2004 and are in good condition, the remaining units are substantially older (40 to 50 years old) and would require more intensive maintenance and renovations to bring them up to current USAF housing standards. Under the No Action Alternative, it is anticipated that these older MFH units would continue to be maintained and renovated, as needed. Based on historical trends, it is assumed that the amount of Congressional funding for MFH would not change and that the housing maintenance backlog would continue to increase. In their existing condition, these MFH units are inadequate facilities.

Results of the HRMA and other USAF surveys (see discussion in **Section 2.1.1**) indicate that Grand Forks AFB should have no more than 547 MFH units (GFAFB 2008b). Under the No Action Alternative, the MFH units being demolished in ongoing and scheduled MILCON-funded projects would still be demolished. Under the No Action Alternative, Grand Forks AFB would have a surplus of 286 MFH units. It is assumed under the No Action Alternative that surplus units would either continue to be maintained or renovated. The maintenance and renovation of these surplus units would be an unnecessary and costly burden to the USAF.

Under the No Action Alternative, Grand Forks AFB would continue to maintain and upgrade infrastructure components as required. Some of the utilities systems and pavements in the MFH parcels are old and require upgrades or replacements to improve overall levels of service and efficiency.

Of the existing 833 MFH units, 286 units proposed for conveyance are in excess of what Grand Forks AFB would need to provide housing to military families, the No Action Alternative presumes that inadequate and surplus units would require major renovation or demolition activities at some point in the future; those activities would require additional NEPA analyses at that time.

3. Affected Environment and Environmental Consequences

All potentially relevant resource areas were initially considered for analysis in this EA. In compliance with NEPA, CEQ, and EIAP 32 CFR Part 989 guidelines, the following discussion of the affected environment and environmental consequences focuses only on those resource areas considered potentially subject to impacts and with potentially significant environmental issues. This section includes noise, land use, air quality, geological resources, water resources, biological resources, cultural resources, socioeconomic resources and environmental justice, infrastructure, hazardous materials and wastes, and safety. Some environmental resources that are often analyzed in an EA, including coastal zone management, visual/aesthetic resources, and airspace management have been omitted from this analysis. The basis for such exclusions is as follows:

Coastal Zone Management. Grand Forks AFB is not within a coastal zone and, therefore, implementation of the Proposed Action would not alter coastal zone resources. Accordingly, the USAF has omitted detailed examination of coastal zone management.

Visual/Aesthetic Resources. The Proposed Action does not involve any activities that would significantly alter the aesthetic qualities of the area or landscape. The Proposed Action would be consistent with the current characteristic features of the area and landscape. Accordingly, the USAF has omitted detailed examination of visual/aesthetic resources in this EA.

Airspace Management. None of the activities associated with the Proposed Action are within designated airspace. The Proposed Action does not involve any activities that would impact designated airspace or military aircraft operations conducted within designated airspace. Accordingly, the USAF has omitted detailed examination of airspace management in this EA.

This section presents an analysis of the potential direct and indirect impacts that each alternative would have on the affected environment. Each alternative was evaluated for its potential to affect physical, biological, and socioeconomic resources in accordance with CEQ guidelines (40 CFR 1508.8).

The following discussion elaborates characterizes the level of impact that could occur for the various resource areas:

Short-term or long-term. These characteristics are determined on a case-by-case basis and do not refer to any rigid time period. In general, short-term impacts are those that would occur only with respect to a particular activity or for a finite period or only during the time required for construction or installation activities. Long-term impacts are those that are more likely to be persistent and chronic.

Direct or indirect. A direct impact is caused by and occurs contemporaneously at or near the location of the action. An indirect impact is caused by a proposed action and might occur later in time or be farther removed in distance but still be a reasonably foreseeable outcome of the action. For example, a direct effect of erosion on a stream might include sediment-laden waters in the vicinity of the action, whereas an indirect impact of the same erosion might lead to lack of spawning and result in lowered reproduction rates of indigenous fish downstream.

Negligible, minor, moderate, or major. These relative terms are used to characterize the magnitude or intensity of an impact. Negligible impacts are generally those that might be perceptible but are at the lower level of detection. A minor impact is slight, but detectable. A moderate impact is readily apparent. A major impact is one that is severely adverse or exceptionally beneficial.

Adverse or beneficial. An adverse impact is one having unfavorable or undesirable outcomes on the man-made or natural environment. A beneficial impact is one having positive outcomes on the man-made or natural environment. A single act might result in adverse impacts on one environmental resource and beneficial impacts on another resource.

Context. The context of an impact can be localized or more widespread (e.g., regional).

Intensity. The intensity of an impact is determined through consideration of several factors, including whether an alternative might have an adverse impact on the unique characteristics of an area (e.g., historical resources, ecologically critical areas), public health or safety, or endangered or threatened species or designated critical habitat. Impacts are also considered in terms of their potential for violation of Federal, state, or local environmental laws; their controversial nature; the degree of uncertainty or unknown impacts, or unique or unknown risks; if there are precedent-setting impacts; and their cumulative impacts (see **Section 4**).

The impact analyses consider all alternatives discussed in **Section 2** that have been identified as reasonable for meeting the purpose of and need for action. These alternatives include the following:

- The Proposed Action (described in **Section 2.1**)
- The No Action Alternative (described in **Section 2.2.2**).

Sections 3.1 through **3.11** discuss potential environmental and socioeconomic impacts on the affected environment.

3.1 Noise

3.1.1 Definition of the Resource

Sound is defined as a particular auditory effect produced by a given source, for example the sound of rain on a rooftop. Noise and sound share the same physical aspects, but noise is considered a disturbance while sound is defined as an auditory effect. Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying. Noise can be intermittent or continuous, steady or impulsive, and can involve any number of sources and frequencies. It can be readily identifiable or generally nondescript. Human response to increased sound levels varies according to the source type, characteristics of the sound source, distance between source and receptor, receptor sensitivity, and time of day. How an individual responds to the sound source will determine if the sound is viewed as music to one's ears or as annoying noise. Affected receptors are specific (e.g., schools, churches, or hospitals) or broad (e.g., nature preserves or designated districts) areas in which occasional or persistent sensitivity to noise above ambient levels exists.

Noise Metrics and Regulations. Although human response to noise varies, measurements can be calculated with instruments that record instantaneous sound levels in decibels. A-weighted decibels (dBA) are used to characterize sound levels (measured in dBA) that can be sensed by the human ear. "A-weighted" denotes the adjustment of the frequency range to what the average human ear can sense when experiencing an audible event. In clinical hearing assessments, it has been shown that the threshold of audibility falls within a range of 10 to 25 dBA for normal hearing. The threshold of pain occurs at the upper boundary of audibility, which is normally in the region of 135 dBA (USEPA 1981a). **Table 3-1** compares common sounds and shows how they rank in terms of the effects of hearing. As shown, a whisper is normally 30 dBA and considered to be very quiet while an air conditioning unit 20 feet away is considered an intrusive noise at 60 dBA. Noise levels can become annoying at 80 dBA and very annoying at 90 dBA. To the human ear, each 10 dBA increase seems twice as loud (USEPA 1981b).

Table 3-1. Sound Levels and Human Response

Noise Level (dBA)	Common Sounds	Effect
10	Just audible	Negligible*
30	Soft whisper (15 feet)	Very quiet
50	Light auto traffic (100 feet)	Quiet
60	Air conditioning unit (20 feet)	Intrusive
70	Noisy restaurant or freeway traffic	Telephone use difficult
80	Alarm clock (2 feet)	Annoying
90	Heavy truck (50 feet) or city traffic	Very annoying; Hearing damage (8 hours)
100	Garbage truck	Very annoying*
110	Pile drivers	Strained vocal effort*
120	Jet takeoff (200 feet) or auto horn (3 feet)	Maximum vocal effort
140	Carrier deck jet operation	Painfully loud

Source: USEPA 1981b
Note: * HDR extrapolation

Sound levels, resulting from multiple single events, are used to characterize community noise effects from aircraft or vehicle activity and are measured in day-night average sound level (DNL). The DNL noise metric incorporates a "penalty" for evening and nighttime noise events to account for increased annoyance. DNL is the energy-averaged sound level measured over a 24-hour period, with a 10-dBA penalty assigned to noise events occurring between 10:00 p.m. and 7:00 a.m. DNL values are obtained by averaging single event values for a given 24-hour period. DNL is the preferred sound level metric used to characterize noise impacts of the Federal Aviation Administration (FAA), U.S. Department of Housing and Urban Development (HUD), USEPA, and DOD for modeling airport environments.

DNL is the metric recognized by the U.S. Government for measuring noise and its impacts on humans. According to the USAF, the FAA, and the HUD criteria, residential units and other noise-sensitive land uses are "clearly unacceptable" in areas where the noise exposure exceeds 75 dBA DNL, "normally unacceptable" in regions exposed to noise between 65 dBA and 75 dBA DNL, and "normally acceptable" in areas exposed to noise of 65 dBA DNL or under. The Federal Interagency Committee on Noise developed land use compatibility guidelines for noise in terms of a DNL (FICON 1992). For outdoor activities, the USEPA recommends a DNL sound level of 55 dBA DNL as the sound level below which there is no reason to suspect that the general population would be at risk from any of the effects of noise (USEPA 1974).

Under the Noise Control Act of 1972, the Occupational Safety and Health Administration (OSHA) established workplace standards for noise. The minimum requirement states that constant noise exposure must not exceed 90 dBA over an 8-hour period. The highest allowable sound level to which workers can be constantly exposed is 115 dBA and exposure to this level must not exceed 15 minutes within an 8-hour period. The standards limit instantaneous exposure, such as impact noise, to 140 dBA. If noise levels exceed these standards, employers are required to provide hearing protection equipment that will reduce sound levels to acceptable limits (29 CFR Part 1910.95).

Construction Sound Levels. Building demolition and construction work can cause an increase in sound that is well above the ambient level. A variety of sounds are emitted from loaders, trucks, saws, and other work equipment. **Table 3-2** lists noise levels associated with common types of construction equipment. Construction equipment usually exceeds the ambient sound levels by 20 to 25 dBA in an urban environment and up to 30 to 35 dBA in a quiet suburban area.

Table 3-2. Predicted Noise Levels for Construction Equipment

Construction Category and Equipment	Predicted Noise Level at 50 feet (dBA)
Clearing and Grading	
Bulldozer	80
Grader	80–93
Truck	83–94
Roller	73–75
Excavation	
Backhoe	72–93
Jackhammer	81–98
Building Construction	
Concrete mixer	74–88
Welding generator	71–82
Pile driver	91–105
Crane	75–87
Paver	86–88

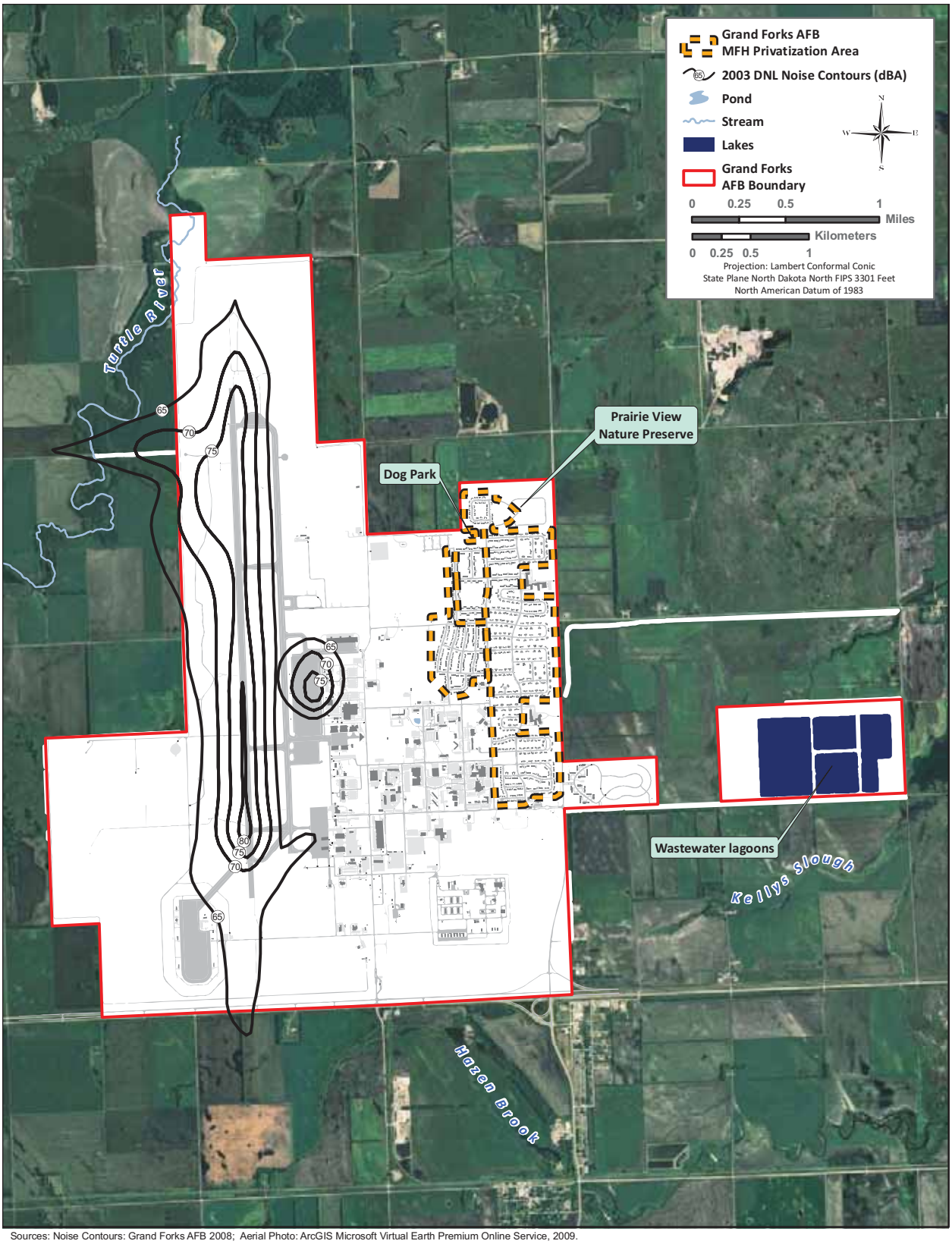
Source: USEPA 1971

3.1.2 Existing Conditions

The ambient noise environment around Grand Forks AFB is affected mainly by military operations and automobile traffic. Military operations that impact the noise environment include aircraft operations and weapons training.

Grand Forks AFB is home to the 319 ABW and the 373rd Training Squadron, Detachment 10. Aircraft flown by these units include the KC-135 Stratotanker aircraft. In 1995, an Air Installation Compatible Use Zone (AICUZ) study was conducted for the installation and was revalidated in 2003 (USAF 1995, USAF 2003). The noise contours from aircraft operations are shown in **Figure 3-1** extending roughly north, northwest, and south along the runway. The contours remain mostly on installation property and do not encompass the site of the Proposed Action.

Vehicle use associated with military operations at Grand Forks AFB consists of passenger vehicles, delivery and fuel trucks, and military vehicles. Passenger vehicles compose most of the vehicles present at Grand Forks AFB, including at the MFH areas, and the surrounding community roadways. Eielson Street, North Dakota County Road B-3, and Steen Boulevard provide access to the installation from U.S. Highway 2 (18th Avenue). Primary roads within the MFH Privatization Area include J Street, Louisiana Street, and Redwood Drive.



Sources: Noise Contours: Grand Forks AFB 2008; Aerial Photo: ArcGIS Microsoft Virtual Earth Premium Online Service, 2009.

Figure 3-1. Noise Contours at Grand Forks AFB

Considering the military aircraft operations, military training operations, and vehicle traffic at and adjacent to Grand Forks AFB, the ambient sound environment around Grand Forks AFB is likely to resemble an urban atmosphere.

3.1.3 Environmental Consequences

3.1.3.1 Evaluation Criteria

Noise impact analyses typically evaluate potential changes to the existing noise environment that would result from implementation of a proposed action. Potential changes in the acoustical environment can be beneficial (i.e., if they reduce the number of sensitive receptors exposed to unacceptable noise levels or reduce the ambient sound level), negligible (i.e., if the total number of sensitive receptors to unacceptable noise levels is essentially unchanged), or adverse (i.e., if they result in increased sound exposure to unacceptable noise levels or ultimately increase the ambient sound level). Projected noise effects were evaluated qualitatively for the Proposed Action and No Action Alternative.

3.1.3.2 Proposed Action

The sources of noise under the Proposed Action that could impact populations include demolition and construction activities. These sources are addressed in the following paragraphs.

The components of the Proposed Action consist of demolition and construction activities associated with demolition of 286 surplus, inadequate MFH units, maintenance and upgrades of the MFH units and ancillary facilities, and possible construction of desired features (e.g., storage facility, community center, and associated pavements and utilities) as discussed in **Section 2.1** Noise from demolition and construction activities varies depending on the type of equipment being used, the area that the action would occur in, and the distance from the noise source. To predict how construction activities would impact adjacent populations, noise from the probable demolition and construction activities was estimated. For example, as shown in **Table 3-2**, demolition and construction usually involves several pieces of equipment (e.g., trucks and bulldozers) that can be used simultaneously. Under the Proposed Action, the total noise from the equipment during the busiest day, and taking into account ambient noise levels, was estimated to determine the total impact of noise from demolition and construction activities at a given distance. Examples of expected demolition and construction noise during daytime hours at specified distances are shown in **Table 3-3**. These sound levels were predicted at 50, 100, 150, 200, 400, 800, and 1,200 feet from the source of the noise.

Table 3-3. Predicted Noise Levels from Demolition and Construction Activities

Distance from Noise Source	Predicted Noise Level
50 feet	92 dBA
100 feet	86 dBA
150 feet	83 dBA
200 feet	80 dBA
400 feet	74 dBA
800 feet	68 dBA
1,200 feet	64 dBA

The noise from demolition and construction equipment would be localized, short-term, and intermittent during machinery operations. Heavy equipment would be used periodically during demolition and construction; therefore, noise levels from the equipment would fluctuate throughout the day. The proposed demolition and construction would be expected to result in noise levels comparable to those indicated in **Table 3-3**.

Under the Proposed Action, 286 surplus, inadequate MFH units in the Holly neighborhood would be demolished over the 6-year transition period. The Holly neighborhood abuts the Redwood and Red River Crossing neighborhoods to the east, and a youth center with athletic fields to the southeast, community uses to the south, and vacant land to the west and north. Therefore, demolition of the MFH units in the Holly neighborhood would occur adjacent to sensitive noise receptors, including residences and playfields. It is assumed that the MFH units in the western portion of the Redwood neighborhood, which are scheduled for demolition, would either be unoccupied or demolished by the time the Holly neighborhood housing units are demolished. The closest MFH units in the Red River Crossing neighborhood are approximately 150 feet from units proposed for demolition in the Holly neighborhood. Assuming these units are occupied, residents could experience maximum intermittent noise levels of approximately 83 dBA during demolition of the closest Holly neighborhood units. The youth center is primarily an indoor facility, and, thus, noise from demolition of MFH units would likely not be heard by those in the facility; however, there is an outdoor athletics field approximately 160 feet from the closet MFH unit in the Holly neighborhood. Users of the field could experience short-term maximum intermittent noise levels of approximately 83 dBA while demolition is occurring nearby. Personnel working at the facility directly southwest of the Holly neighborhood could also experience maximum intermittent noise levels of approximately 80 dBA while outside; however, most of the other community uses south of the Holly neighborhood would experience much lower noise levels.

Consequently, demolition activities under the Proposed Action would result in short-term, minor, adverse impacts on the noise environment in the vicinity of demolition activities. However, noise generation would last only for the duration of demolition activities and would diminish as demolition activities move farther away from the receptor. Noise generation could be minimized by restricting demolition to normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.), and the use of measures such as equipment exhaust mufflers. It is not anticipated that the short-term increase in ambient noise levels from the Proposed Action would cause significant adverse effects on the surrounding populations.

As discussed in **Section 2.1**, some of the 286 housing units proposed for demolition in the Holly neighborhood would be offered as excess through the OWS Program instead of being demolished. Short-term, minor, adverse impacts on the noise environment would be expected from removal of the units, transport of the units (e.g., on a flatbed truck), and associated demolition activities (e.g., the demolition of the foundation after the structure is removed). Noise impacts would be similar to those discussed above for the demolition activities included under the Proposed Action.

Short-term, negligible to minor, adverse impacts on the ambient noise environment are anticipated as a result of the increase in construction vehicle traffic under the Proposed Action. Construction traffic would use existing roadways as discussed in **Section 3.1.2** to access the MFH areas. Consequently, the additional traffic resulting from construction vehicles would likely cause negligible to minor increases in noise levels on noise-sensitive populations adjacent to these roadways.

The Proposed Action would also include continued maintenance and upgrades of MFH units and ancillary facilities, and possible construction of desired features (e.g., bus shelters, recreational facilities, community center/clubhouse, and trails). The locations of these MFH units and ancillary facilities and desired features to be constructed is not known; however, if these activities require the use of heavy equipment and occur near sensitive receptors (e.g., occupied residences, schools, and athletic fields)

short-term, minor, adverse impacts on the noise environment could result. However, the maintenance and construction activities would only be temporary during completion of the activity, and would occur during normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.).

3.1.3.3 No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented and conditions described in **Section 3.1.2** would remain the same. The proposed demolition and construction activities would not occur, although the older MFH units would continue to be maintained and renovated, as needed. It would not be expected that noise generated from these activities would be significant, and therefore, the ambient noise environment would not change from existing conditions.

3.2 Land Use

3.2.1 Definition of the Resource

The term "land use" refers to real property classifications that indicate either natural conditions or the types of human activity occurring on a parcel. In many cases, land use descriptions are codified in local zoning laws. However, there is no nationally recognized convention or uniform terminology for describing land use categories. As a result, the meanings of various land use descriptions, "labels," and definitions vary among jurisdictions. Natural conditions of property can be described or categorized as unimproved, undeveloped, conservation or preservation area, and natural or scenic area. There is a wide variety of land use categories resulting from human activity. Descriptive terms often used include residential, commercial, industrial, agricultural, institutional, and recreational. USAF installation land use planning commonly uses 12 general land use classifications: Airfield, Aircraft Operations and Maintenance, Industrial, Administrative, Community (Commercial), Community (Service), Medical, Housing (Accompanied), Housing (Unaccompanied), Outdoor Recreation, Open Space, and Water (USAF 1998).

Two main objectives of land use planning are to ensure orderly growth and compatible uses among adjacent property parcels or areas. Compatibility among land uses fosters the societal interest of obtaining the highest and best uses of real property. Tools supporting land use planning within the civilian sector include written master plans/management plans, policies, and zoning regulations. According to Air Force Pamphlet (AFPAM) 32-1010, *Land Use Planning*, land use planning is the arrangement of compatible activities in the most functionally effective and efficient manner. The USAF comprehensive planning process also uses functional analysis, which determines the degree of connectivity among installation land uses and between installation and off-installation land uses, to determine future installation development and facilities planning (USAF 1998).

In appropriate cases, the location and extent of a proposed action needs to be evaluated for its potential effects on a project site and adjacent land uses. The foremost factor affecting a proposed action in terms of land use is its compliance with any applicable land use or zoning regulations. Other relevant factors include matters such as existing land use at the project site, the types of land uses on adjacent properties and their proximity to a proposed action, the duration of a proposed activity, and its "permanence."

3.2.2 Existing Conditions

Surrounding Off-Installation Land Use. Grand Forks AFB is in Mekinock and Blooming townships in east-central Grand Forks County, North Dakota, near the North Dakota-Minnesota state boundary. It is north of and adjacent to the City of Emerado and approximately 15 miles west of the City of Grand Forks

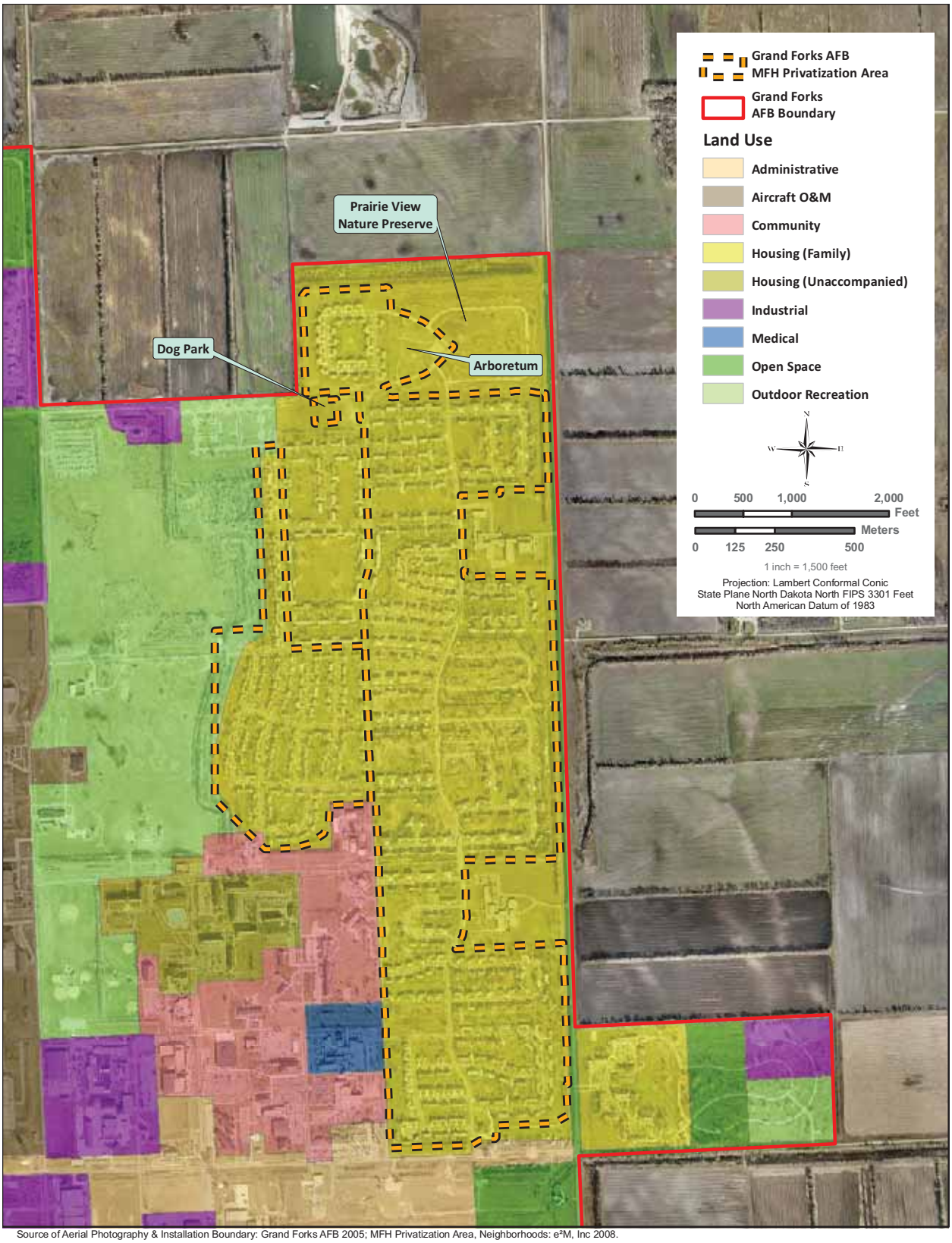
(see **Figure 1-1**). Access to Grand Forks AFB is provided by U.S. Highway (US) 2 and North Dakota County Road B-3 (B-3), which form the installation's southern and eastern boundaries, respectively. The area surrounding the installation is rural, consisting primarily of agriculture and open space (pasture, recreation, and wildlife habitat) with scattered residences. The major crops include potatoes, sugar beets, soybeans, corn, barley, spring wheat, sunflowers, and oats (GFAFB 2005). In addition to the urban uses in the City of Emerado, other uses surrounding Grand Forks AFB include a University of North Dakota-owned biological research area adjacent to the installation's western boundary, and the installation sewage treatment system on a separate parcel of land east of the main installation.

Grand Forks AFB is surrounded by Mekinock Township to the west and north, Blooming Township to the east, Oakville Township to the south-southeast, and Chester Township to the south. Grand Forks County has jurisdiction over land use and zoning within Blooming and Chester townships. The land use designations within Blooming and Chester townships primarily include Agricultural or Vacant; however, there are several parcels designated Institutional or Public Land (installation neighborhood and wastewater treatment plant, and Kellys Slough National Wildlife Refuge and Waterfowl Production Areas) east of the installation, and scattered Residential parcels. The primary future land use identified east and south of the installation is Agricultural. A small area in Chester Township south of Grand Forks AFB runway is designated as an Airport Protection Zone (Grand Forks County 2006a). The corresponding Grand Forks County zoning designations for these areas east and south of the installation include Airfield Reserve District and Airfield Preservation District, and the Floodplain Overlay District, respectively (Grand Forks County 2009, Grand Forks County 2006b).

Mekinock and Oakville townships and the City of Emerado enforce land use and zoning regulations within their boundaries and extraterritorial areas (Grand Forks County 2006a). The primary Mekinock Township general land use designation surrounding Grand Forks AFB is Agricultural, but Township Roads also exist in the vicinity (Mekinock Township 1996). While no zoning map was available with the Mekinock Township Zoning Ordinance, it is assumed that the land surrounding Grand Forks AFB is within the Agricultural zoning district. The purpose of the Agricultural district is to allow agricultural activities and regulate growth; the permitted uses within this district include general farming operations and approximately 20 conditionally permitted uses (Mekinock Township 1979). No land use or zoning information was available from Oakville Township or the City of Emerado.

Installation Land Use. Grand Forks AFB consists of 5,773 acres and has an average daily population of 4,919 people with active-duty personnel consisting of 1,693 military and 376 civilian employees (Vanderhoff 2010). The 319 ABW, who, in addition to their main mission of training and deploying more than 1,300 airmen in support of the Air Expeditionary Force and combatant commander requirements, is also the host wing of the installation. They provide support to other tenants, including the 373rd Training Squadron, Detachment 10; the Air Force Audit Agency; the USACE; and the DHS.

The *Grand Forks Air Force Base General Plan* identifies 10 land use categories: Administrative, Aircraft Operations and Maintenance (O&M), Airfield, Community, Housing (Family), Housing (Unaccompanied), Industrial, Medical, Open Space, and Outdoor Recreation (USAF 2006, USAF 2008a). **Figure 3-2** shows the existing land uses that have been defined at Grand Forks AFB in the vicinity of the MFH area. The dominant land use at Grand Forks AFB is the Airfield, which runs north-south and occupies the central portion of the installation. Due to their interdependent nature, Aircraft O&M and Industrial uses are found in close proximity to the Airfield. The main cantonment area is east of the airfield and includes all Administration, Housing (Family and Unaccompanied), Medical, and Community uses; and most Outdoor Recreation uses. The primary land use west of the airfield is Open Space. The Proposed Action would be within the Family Housing land use designation.



Source of Aerial Photography & Installation Boundary: Grand Forks AFB 2005; MFH Privatization Area, Neighborhoods: e²M, Inc 2008.

Figure 3-2. Grand Forks AFB Existing Land Use Designations in the Vicinity of MFH

The proposed land use plan, as presented in the General Plan, is similar to the existing land use categories; however, the proposed land use plan includes the following differences:

- Administrative land uses would be consolidated in two areas along Steen Boulevard. The largest area, just west of the main entrance, would include most of the support administrative functions, while the other area would consist of the command and control functions.
- The Family Housing land use would expand at its northwestern portion.
- Aircraft O&M land uses would be expanded to consist of one continuous band west of Eielson Street and east of the parking aprons (USAF 2006).

Deer bow hunting and agricultural uses (e.g., cultivation of hay) are permitted in specific areas of Grand Forks AFB (GFAFB 2009b, GFAFB 2005). Bow hunting is permitted on the installation, within the following areas: the unimproved area outside of the perimeter fence at the northwestern corner of the installation (commonly referred to as CE Park), a large area to the southwest of the airfield inside the installation perimeter fence, in the Munitions Storage Area (MSA) fields, within the Sunflake neighborhood, surrounding the sewage treatment lagoons, to the west of the Holly neighborhood, and within the Prairie View shelterbelt to the north of the Prairie View Court neighborhood and PVNP). Additional areas are open dependent on weather conditions, including the golf course to the south of the runways, the North Horse Pasture and Trail area, and the South Trail in the Holly neighborhood. Hunting is not permitted within 200 feet of any building or dwelling within the authorized hunting area and in areas where training or other activities are occurring (GFAFB 2009b).

CE Park is designated as Outdoor Recreation, and the area southwest of the airfield is designated as Open Space. Hay cultivation is permitted on Grand Forks AFB through the agricultural outlease program. There is one hay lease consisting of 664 acres covering several sites inside the airfield fence (west, north, and east of the runway) and outside of the airfield fence (southwest, south, and southeast of the runway) (USAF 2007). The hay lease areas inside the airfield fence are designated as Airfield land use, whereas the areas outside of the fence are Industrial, Airfield, and Open Space. An additional hay lease is in progress and will be awarded this spring.

3.2.3 Environmental Consequences

3.2.3.1 Evaluation Criteria

The significance of potential land use effects is based on the level of land use sensitivity in areas affected by a proposed action and compatibility of proposed actions with existing conditions. A proposed action could have a significant effect with respect to land use if any the following were to occur:

- Be inconsistent or in noncompliance with existing land use plans or policies
- Preclude the viability of existing land use
- Preclude continued use or occupation of an area
- Be incompatible with adjacent land use to the extent that public health or safety is threatened
- Conflict with planning criteria established to ensure the safety and protection of human life and property.

3.2.3.2 Proposed Action

The Proposed Action would be in compliance with the *Grand Forks Air Force Base General Plan*, including the goals and the existing and future (proposed) installation land use designations. The Proposed Action would be consistent with some of Grand Forks AFB's main long-term goals presented in the general plan such as establishment of efficient, effective, and compatible land uses; maximizing the expansion capabilities of Grand Forks AFB; enhancement of facilities' architectural compatibility and landscape improvement; maximizing the quality of life for personnel living and working at the installation; and ensuring the protection, supply, use, and management of human, financial, environmental, and constructed resources. The Proposed Action would occur within the Housing (family) land use designation and would not require changes to the current and future land use designations, except if desired features such as a storage facility or community center/clubhouse are constructed. If the community center/clubhouse and storage facility are constructed, these areas could require changing the land use designation from Housing (family) to Community. The proposed land use plan indicates that the Housing (family) land use designation would remain similar to the existing conditions, except would expand slightly to the west, and the PVNP would require changing the land use designation from Housing (family) to Open Space once privatization is complete.

The Proposed Action would reduce the quantity of MFH units within the Housing (family) land use designation (within the Holly neighborhood) through demolition. Under the Proposed Action, the Holly neighborhood (Parcel 2) would be transferred back to the Government after completion of demolition, and, while it is not known what could occur in this area, it is possible that it would be developed by Grand Forks AFB. This area would also likely require a land use designation change based on its future use. Long-term, negligible, adverse impacts on land use from inconsistencies with land use plans and policies would be expected due to the need to change land use designations.

The Proposed Action would not violate local zoning ordinances because municipal zoning regulations do not apply to Federal property. Therefore, the Proposed Action would not result in any impacts on municipal land use plans or policies.

The Proposed Action would be compatible with all surrounding land uses and would not preclude the viability or continued use and occupation of existing land uses at Grand Forks AFB. In several neighborhoods that are currently designated as Housing (family), the MFH use would continue under the Proposed Action. The continued maintenance and upgrades of the MFH units and ancillary facilities would make the units more livable, thereby reinforcing the viability and continued use of the units as MFH. The demolition of 286 MFH units in the Holly neighborhood would remove inadequate facilities and create vacant land that could be developed with desired features such as recreational facilities, trails, and a community center/clubhouse. Enhancement of the MFH area would support the continued use of the adjacent Community and Outdoor Recreation land uses, which are both functionally important to the Housing (family) land use (USAF 1998). It is not known what would be developed in Parcel 2 (Holly neighborhood) after the existing MFH units are demolished and the parcel is transferred back to Grand Forks AFB. It is possible that the future use could be incompatible with the adjacent Family Housing land use. Demolition and maintenance activities, and activities associated with possible construction of desired features could also result in noise that could be heard by nearby occupied MFH units and the two schools. However, the noise produced would be short-term and would not be of a level that would make it incompatible with surrounding uses. Therefore, the Proposed Action would result in short-term, minor, adverse effects and long-term, moderate, beneficial effects on the viability of existing land use and continued occupation at Grand Forks AFB.

The Proposed Action would not result in any effects on the compatibility of adjacent land uses with respect to public health and safety and would not conflict with health and safety planning criteria.

3.2.3.3 No Action Alternative

The No Action Alternative would result in a continuation of the existing land use conditions described in **Section 3.2.2**. Under the No Action Alternative, the surplus of 286 MFH units, which were constructed in 1964, would either continue to be maintained or renovated, which would be an unnecessary and costly burden to the USAF, and none of the additional desired features described under the Proposed Action would be constructed. The No Action Alternative would be inconsistent with some of the Grand Forks AFB long-term goals identified in the General Plan, including establishment of efficient and effective land uses, enhancement of facilities' architectural compatibility, and maximizing the quality of life for personnel living and working at the installation. The No Action Alternative would result in long-term, minor, adverse impacts on land use. At some point in the future, the surplus units would become inadequate and require major renovation or demolition activities; however, these activities would require NEPA analyses at the time of their occurrence.

3.3 Air Quality

3.3.1 Definition of the Resource

In accordance with Federal Clean Air Act (CAA) requirements, the air quality in a given region or area is measured by the concentration of various pollutants in the atmosphere. The measurements of these "criteria pollutants" in ambient air are expressed in units of parts per million (ppm), milligrams per cubic meter (mg/m^3), or micrograms per cubic meter ($\mu g/m^3$). The air quality in a region is a result of not only the types and quantities of atmospheric pollutants and pollutant sources in an area, but also surface topography, the size of the topological "air basin," and the prevailing meteorological conditions.

The CAA directed the USEPA to develop, implement, and enforce strong environmental regulations that would ensure clean and healthy ambient air quality. To protect public health and welfare, USEPA developed numerical concentration-based standards, or National Ambient Air Quality Standards (NAAQS), for pollutants that have been determined to impact human health and the environment. USEPA established both primary and secondary NAAQS under the provisions of the CAA. NAAQS are currently established for six criteria air pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter (including particulate matter equal to or less than 10 microns in diameter [PM_{10}] and particulate matter equal to or less than 2.5 microns in diameter [$PM_{2.5}$]), and lead (Pb). The primary NAAQS represent maximum levels of background air pollution that are considered safe, with an adequate margin of safety to protect public health. Secondary NAAQS represent the maximum pollutant concentration necessary to protect vegetation, crops, and other public resources along with maintaining visibility standards. North Dakota has adopted a more stringent set of standards, termed the North Dakota Ambient Air Quality Standards (NDAAQS). **Table 3-4** presents the primary and secondary USEPA NAAQS and NDAAQS.

Although O_3 is considered a criteria air pollutant and is measurable in the atmosphere, it is not often considered a regulated air pollutant when calculating emissions because O_3 is typically not emitted directly from most emissions sources. Ozone is formed in the atmosphere by photochemical reactions involving sunlight and previously emitted pollutants or "O_3 precursors." These O_3 precursors consist primarily of nitrogen oxides (NO_x) and volatile organic compounds (VOCs) that are directly emitted from a wide range of emissions sources. For this reason, regulatory agencies attempt to limit atmospheric O_3 concentrations by controlling VOC pollutants (also identified as reactive organic gases) and NO_2. As authorized by the CAA, USEPA has delegated responsibility for ensuring compliance with NAAQS to the states and local agencies. As such, each state must develop air pollutant control programs and promulgate regulations and rules that focus on meeting NAAQS and maintaining healthy ambient air quality levels.

Table 3-4. National and State Ambient Air Quality Standards

Pollutant	Averaging Time	Primary Standard		Secondary Standard
		Federal [a]	State	
CO	8-hour [b]	9 ppm (10 mg/m^3)	Same	None
	1-hour [b]	35 ppm (40 mg/m^3)	Same	None
Pb	Quarterly average	1.5 µg/m^3	Same	Same as Primary
	Rolling 3-Month Average	0.15 µg/m^3 [c]	--	Same as Primary
NO_2	Annual Arithmetic Mean	53 ppb [d]	Same	Same as Primary
	1-hour	100 ppb [e]	--	None
PM_{10}	Annual Arithmetic Mean	--	50 µg/m^3	Same as Primary
	24-hour [f]	150 µg/m^3	Same	Same as Primary
$PM_{2.5}$	Annual Arithmetic Mean [g]	15 µg/m^3	Same	Same as Primary
	24-hour [h]	35 µg/m^3	Same	Same as Primary
O_3	8-hour [i]	0.075 ppm (2008 Standard)	Same	Same as Primary
	8-hour [j]	0.08 ppm (1997 Standard)	--	Same as Primary
	1-hour [k]	0.12 ppm	Same	Same as Primary
SO_2	Annual Arithmetic Mean	0.03 ppm	0.023 ppm	0.5 ppm (3-hour) [b]
	24-hour [b]	0.14 ppm	0.099 ppm	0.5 ppm (3-hour) [b]
	1-hour	75 ppb [l]	0.273 ppm	None

Sources: USEPA 2010c, NDDH 1998

Notes:

a. Parenthetical values are approximate equivalent concentrations.
b. Not to be exceeded more than once per year.
c. Final rule signed 15 October 2008.
d. The official level of the annual NO_2 standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of cleaner comparison to the 1-hour standard.
e. To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb (effective 22 January 2010).
f. Not to be exceeded more than once per year on average over 3 years.
g. To attain this standard, the 3-year average of the weighted annual mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m^3.
h. To attain this standard, the 3-year average of the weighted annual of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m^3 (effective 17 December 2006).
i. To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm (effective 27 May 2008).
j. 1. To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.
   2. The 1997 standard – and the implementation rules for that standard – will remain in place for implementation purposes as USEPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.
   3. USEPA is in the process of reconsidering these standards (set in March 2008).
k. 1. USEPA revoked the 1-hour ozone standard in all areas, although some areas have continuing obligations under that standard (anti-backsliding).
   2. The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is $\leq$ 1.
l. Final rule signed on 2 June 2010. To attain this standard, the 3-year average of the 99th percentile of daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb.

Key: ppm = parts per million; mg/m^3 = milligrams per cubic meter; µg/m^3 = micrograms per cubic meter

These programs are detailed in State Implementation Plans (SIPs) that must be developed by each state or local regulatory agency and approved by USEPA. A SIP is a compilation of regulations, strategies, schedules, and enforcement actions designed to move the state into compliance with all NAAQS. Any changes to the compliance schedule or plan (e.g., new regulations, emissions budgets, controls) must be incorporated into the SIP and approved by USEPA.

In 1997, USEPA initiated work on new General Conformity rules and guidance to reflect the new 8-hour O_3, $PM_{2.5}$, and regional haze standards that were promulgated in that year. The 1-hour O_3 standard will no longer apply to an area 1 year after the effective date of the designation of that area for the 8-hour O_3 NAAQS. The effective designation date for most areas was June 15, 2004. USEPA designated $PM_{2.5}$ nonattainment areas in December 2004, and finalized the $PM_{2.5}$ implementation rule in January 2005. No county in the state of North Dakota was identified as being nonattainment for the $PM_{2.5}$ standard.

On 22 September 2009, the USEPA issued a final rule for mandatory GHG reporting from large GHG emissions sources in the United States. The purpose of the rule is to collect comprehensive and accurate data on carbon dioxide (CO_2) and other GHG emissions that can be used to inform future policy decisions. In general, the threshold for reporting is 25,000 metric tons or more of CO_2 equivalent per year. The first emissions report is due in 2011 for 2010 emissions. Although GHGs are not currently regulated under the CAA, the USEPA has clearly indicated that GHG emissions and climate change are issues that need to be considered in future planning. GHGs are produced by the burning of fossil fuels and through industrial and biological processes.

EO 13514 *Federal Leadership in Environmental, Energy, and Economic Performance*, was signed in October 2009 and requires agencies to set goals for reducing GHG emissions. One requirement within EO 13514 is the development and implementation of an agency Strategic Sustainability Performance Plan (SSPP) that prioritizes agency actions based on lifecycle return on investment. Each SSPP is required to identify, among other things, "agency activities, policies, plans, procedures, and practices" and "specific agency goals, a schedule, milestones, and approaches for achieving results, and quantifiable metrics" relevant to the implementation of EO 13514. Detailed agency implementation plans for EO 13514 were due in June 2010, when each Federal agency was to deliver a SSPP to the CEQ and the Office of Management and Budget. These implementation plans describe the specific actions agencies will take to achieve their individual GHG reduction targets, reduce long-term costs, and meet the full range of goals of the EO. The DOD *Strategic Sustainability Performance Plan* was made public on 26 August 2010, and is available at http://www.whitehouse.gov/administration/eop/ceq/sustainability/plans. DOD guidance on analyzing and reporting GHGs has not yet been made public. The first air quality emissions report is due in 2011 for 2010 emissions. Title V of the CAA Amendments of 1990 requires states and local agencies to permit major stationary sources. A major stationary source is a facility (i.e., plant, installation, or activity) that has the potential to emit more than 100 tons per year (tpy) of any one criteria air pollutant, 10 tpy of a hazardous air pollutant (HAP), or 25 tpy of any combination of HAPs.

Title V of the CAA Amendments of 1990 requires states and local agencies to permit major stationary sources. A major stationary source is a facility (i.e., plant, installation, or activity) that has the potential to emit more than 100 tons per year (tpy) of any one criteria air pollutant, 10 tpy of a hazardous air pollutant (HAP), or 25 tpy of any combination of HAPs.

Federal Prevention of Significant Deterioration (PSD) regulations also define air pollutant emissions from proposed major stationary sources or modifications to be "significant" if (1) a proposed project is within 10 kilometers of any Class I area, and (2) regulated pollutant emissions would cause an increase in the 24-hour average concentration of any regulated pollutant in the Class I area of 1 $\mu g/m^3$ or more [40 CFR 52.21(b)(23)(iii)]. PSD regulations also define ambient air increments, limiting the allowable

increases to any area's baseline air contaminant concentrations, based on the area's designation as Class I, II, or III [40 CFR 52.21(c)]. Because Grand Forks AFB is not within 10 kilometers of a Class I area, PSD regulations do not apply and are not discussed further in this EA.

3.3.2 Existing Conditions

Grand Forks AFB is located in Grand Forks County, which is within North Dakota Air Quality Control Region (AQCR) 172. AQCR 172 consists of the all counties in North Dakota with the exception of Metropolitan Fargo, North Dakota. As defined in 40 CFR 81.335, Grand Forks County is designated as attainment/unclassifiable for all criteria pollutants (USEPA 2002a).

The most recent emissions inventories for Grand Forks County and AQCR 172 are shown in **Table 3-5**. Grand Forks County is considered the local area of influence, and AQCR 172 is considered the regional area of influence for the air quality analysis.

Table 3-5. Local and Regional Air Emissions Inventory for the Proposed Action (2002)

	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Grand Forks County, ND	3,786	2,952	22,947	1,381	12,711	2,034
AQCR 172	36,630	16,704	118,068	5,576	145,387	23,540

Source: USEPA 2002b

The U.S. Department of Energy, Energy Information Administration estimates that gross CO_2 emissions in North Dakota were 53.55 million metric tons in 2005 (DOE/EIA 2010).

The NDDH regulates air quality for the State of North Dakota. Grand Forks AFB is classified as a major source of emissions and has an Air Pollution Control Title V Permit to Operate (NDDH 2007). As required by the NDDH, Grand Forks AFB calculates annual criteria pollutant emissions from stationary sources and provides this information to the NDDH. There are various sources on-installation that emit criteria pollutants and HAPs, including generators, boilers, hot water heaters, fuel storage tanks, gasoline service stations, surface coatings/paint booths, and miscellaneous chemical usage.

3.3.3 Environmental Consequences

3.3.3.1 Evaluation Criteria

The environmental consequences to local and regional air quality conditions near a proposed Federal action are determined based upon the increases in regulated pollutant emissions relative to existing conditions and ambient air quality. Specifically, the impact in NAAQS "attainment" areas would be considered significant if the net increases in pollutant emissions from the Federal action would result in any one of the following scenarios:

- Cause or contribute to a violation of any national or state ambient air quality standard
- Expose sensitive receptors to substantially increased pollutant concentrations
- Exceed any evaluation criteria established by a SIP or permit limitation

- Produce emissions representing an increase of 100 tons per year for any attainment criteria pollutant (i.e., NO_x, VOCs, CO, PM_{10}, $PM_{2.5}$, SO_2), unless the proposed activity qualifies for an exemption under the Federal General Conformity Rule.

Although the 100 tons per year threshold is not a regulatory driven threshold, it is being applied as a conservative measure of significance in attainment areas. The rationale for this conservative threshold is that it is consistent with the highest General Conformity *de minimis* levels for nonattainment areas and maintenance areas. In addition, it is consistent with Federal stationary source major source thresholds for Title V permitting that formed the basis for the nonattainment *de minimis* levels.

3.3.3.2 Proposed Action

The Proposed Action would generate both temporary and long-term air pollutant emissions. The projects associated with the Proposed Action would generate air pollutant emissions as a result of grading, filling, compacting, trenching, demolition, and construction operations, but these emissions would be temporary and would not be expected to generate any offsite effects. The Proposed Action would not result in a net increase in personnel or commuter vehicles. Therefore, the Proposed Action's emissions from existing personnel and commuter vehicles would not result in an adverse impact on regional air quality.

Construction operations would result in short-term emissions of criteria pollutants as combustion products from construction equipment, and evaporative emissions from architectural coatings and asphalt paving operations. Emissions of all criteria pollutants would result from construction and demolition activities including combustion of fuels from on-road haul trucks transporting materials and construction commuter emissions.

Construction, demolition, and renovation projects would generate particulate matter emissions as fugitive dust from ground-disturbing activities. Fugitive dust emissions would be greatest during initial site-preparation activities and would vary from day to day depending on the construction phase, level of activity, and prevailing weather conditions. The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked and the level of construction activity. Appropriate fugitive dust-control measures would be employed during construction, demolition, and renovation activities to suppress emissions.

All emissions associated with construction, demolition, and renovation activities would be temporary in nature. There would be negligible new operational emissions associated with the Proposed Action. These operational emissions would be from combustion of natural gas in boilers and heaters used to heat the new community center. Per the North Dakota Air Pollution Control Regulations under North Dakota Administrative Code [NDAC 33-15-14-02.13.b], the air construction permit threshold for stationary fuel combustion sources is 10 million British Thermal Units (BTUs) per hour. Although the size of the new boilers and heaters are unknown, it is not anticipated they would be large enough to require an air construction permit. The new boilers and heaters might not require a modification of the facility's Title V air operating permit until the next Title V permit renewal because it is anticipated they would be considered insignificant activities. According to Grand Forks AFB's Title V permit, insignificant activities are not required for inclusion in the annual emissions inventory (NDDH 2007). While the proposed additional boilers may not be significant, the Title V permit requires that an equipment inventory be maintained for all insignificant sources. Coordination of new purchases of insignificant equipment must be completed with the installation.

Although the Proposed Action could occur over the span of a 6-year period, the Proposed Action was analyzed as if it would occur in 1 calendar year. It is not expected that emissions from demolition and construction of the projects associated with the Proposed Action would contribute to or affect local or

regional attainment status with the NAAQS or NDAAQS. Emissions from the Proposed Action are summarized in **Table 3-6**. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix F**.

Table 3-6. Estimated Air Emissions Resulting from the Proposed Action

Activity	NO_x tpy	VOC tpy	CO tpy	SO_2 tpy	PM_{10} tpy	$PM_{2.5}$ tpy	CO_2 tpy
Construction Combustion	35.591	2.438	14.290	0.993	2.207	2.141	4,131.761
Construction Fugitive Dust	--	--	--	--	60.663	3.191	--
Haul Truck On-Road	1.738	1.256	5.106	0.137	2.066	0.537	439.921
Construction Commuter	0.110	0.110	0.992	0.001	0.010	0.007	131.482
Total Proposed Action Emissions	**37.439**	**3.805**	**20.387**	**1.131**	**64.947**	**5.875**	**4,703.164**
Percent of AQCR 172 Inventory	0.022	0.009	0.007	0.001	0.018	0.009	0.008*

Note: * Percent of State of North Dakota CO_2 emissions.

The Energy Information Administration estimates that in 2005, gross CO_2 emissions in North Dakota were 53.6 million metric tons (DOE/EIA 2010). Approximately 4,264 metric tons (4,703.164 tpy) of CO_2 were estimated to be emitted by the Proposed Action, which is less than 0.008 percent of the North Dakota statewide CO_2 emissions. Therefore, the Proposed Action would have a negligible contribution towards the North Dakota statewide GHG inventory. CO_2 emissions estimates are included in **Appendix F**.

Because Grand Forks AFB is classified as an attainment/unclassifiable area for all criteria pollutants, General Conformity Rule requirements are not applicable. The Proposed Action would generate emissions well below *de minimis* levels. In addition, the Proposed Action would generate emissions well below 10 percent of the emissions inventories for North Dakota AQCR 172 and the emissions would be short-term. Therefore, the construction, demolition, and renovation activities associated with the Proposed Action would not have significant effects on air quality at Grand Forks AFB or on regional or local air quality. **Appendix F** includes the air emissions estimation spreadsheets and methodology.

3.3.3.3 No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented and no effects would be anticipated on air quality. Grand Forks AFB has 547 MFH units that are considered in excellent condition. It is anticipated that these 547 MFH units would continue to provide adequate housing for many years into the future with only minor maintenance and repairs. The 286 surplus, inadequate MFH units in Parcel 2 would not be demolished and would continue to be used. These 286 MFH units would require more intensive maintenance and renovations to bring them up to current USAF housing standards. However, no adverse impacts on air quality are anticipated.

3.4 Geological Resources

3.4.1 Definition of the Resource

Geological resources consist of the Earth's surface and subsurface materials. Within a given physiographic province, these resources typically are described in terms of topography and physiography, geology, soils, and, where applicable, geologic hazards and paleontology.

Topography and physiography pertain to the general shape and arrangement of a land surface, including its height and the position of its natural and human-made features.

Geology is the study of the Earth's composition and provides information on the structure and configuration of surface and subsurface features. Such information derives from field analysis based on observations of the surface and borings to identify subsurface composition.

Soils are the unconsolidated materials overlying bedrock or other parent material. Soils typically are described in terms of their complex type, slope, and physical characteristics. Differences among soil types in terms of their structure, elasticity, strength, shrink-swell potential, and erosion potential affect their abilities to support certain applications or uses. In appropriate cases, soil properties must be examined for their compatibility with particular construction activities or types of land use.

Prime farmland is protected under the Farmland Protection Policy Act (FPPA) of 1981. Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses. The soil qualities, growing season, and moisture supply are needed for a well-managed soil to produce a sustained high yield of crops in an economic manner. The land could be cropland, pasture, rangeland, or other land, but not urban built-up land or water. The intent of the FPPA is to minimize the extent that Federal programs contribute to the unnecessary conversion of farmland to nonagricultural uses. The Act also ensures that Federal programs are administered in a manner that, to the extent practicable, will be compatible with private, state, and local government programs and policies to protect farmland.

The implementing procedures of the FPPA and Natural Resources Conservation Service (NRCS) require Federal agencies to evaluate the adverse effects (direct and indirect) of their activities on prime and unique farmland, and farmland of statewide and local importance, and to consider alternative actions that could avoid adverse effects. Determination of whether an area is considered prime or unique farmland and potential impacts associated with a proposed action is based on preparation of the farmland conversion impact rating form AD-1006 for areas where prime farmland soils occur and by applying criteria established at Section 658.5 of the FPPA (7 CFR Part 658). The NRCS is responsible for overseeing compliance with the FPPA and has developed the rules and regulations for implementation of the Act (see 7 CFR Part 658, July 5, 1984).

3.4.2 Existing Conditions

Geology. Grand Forks AFB is in the Central Lowland Physiographic Province along the flat former glacial Lake Agassiz Plain. Grand Forks AFB is situated near the eastern edge of the Williston Structural Basin with bedrock strata dipping gently towards the center of the basin in the west (USAF 2006). Precambrian-aged bedrock (4.5 billion to 543 million years before present) is overlain by 130 feet of glacial till and 95 feet of lacustrine deposits. The glacial deposits are composed of silts and clays with occasional sand and gravel lenses (CBP 2008).

Topography. Grand Forks AFB and the site of the Proposed Action are characterized by flat to gently sloped topography, with a northeastward slope of about 1.5 to 2 feet per mile on the installation (CBP 2008). Across the installation, elevations range from 900 feet above mean sea level (msl) on the western side to 880 feet above msl on the eastern side, where the site of the Proposed Action is located.

Soils. Grand Forks AFB is underlain by six loamy soil associations with varying amounts of sand: the Antler-Gilby-Svea, the Bearden-Antler, the Glyndon-Gardens, the Delle-Cashel, the Ojata, and the Wyndmere-Tiffany-Arveson (GFAFB 2003a). Soils at Grand Forks AFB are deep, fairly level, and somewhat poorly to moderately well-drained with a high shrink-swell potential (CBP 2008). These soils are also highly susceptible to wind erosion. Soils in the vicinity of the site of the Proposed Action are loamy from 0 to 12 inches below ground surface (bgs); loam, silty loam, and very fine sandy loam from 12 to 26 inches bgs; and loam to clayey loam from 26 to 60 inches bgs (GFAFB 2007a).

Soils mapped at the site of the Proposed Action and soil limitations are shown in **Table 3-7**. Soil limitations to construction were determined based on data available in the NRCS's web soil survey (NRCS 2010). Most of the soils that were rated for construction limitations are considered to be somewhat to moderately limited, primarily due to depth to saturation. The Hamar sandy loam, mapped in the Roughrider Way neighborhood, is rated very limited for construction due to ponding and depth to saturation. The Antler silty clay loam is rated as somewhat limited due to the presence of shrink-swell clays, and is only mapped within the Prairie View Court neighborhood, proposed dog park, and the PVNP.

Prime Farmland. Of the nine soil units mapped within the site of the Proposed Action, four are considered prime farmland soils, two are considered prime farmland soil if drained, and one is a farmland of statewide importance soil (NRCS 2010). However, this land is not available for agriculture because it is currently developed or considered to be urban or built-up land, which by definition cannot be prime farmland. According to the U.S. Department of Agriculture, urban or built-up land consists of land cover or land uses including residential, public administrative sites, and small parks (less than 10 acres) within urban and built-up areas (NRCS 1999). Therefore, the areas where prime farmland soils are mapped at the site of the Proposed Action would not be considered prime farmland.

Geologic Hazards. The potential for damaging seismic activity at the installation is low as North Dakota is seismically stable. Infrequent, small earthquakes could occur within North Dakota, but it is unlikely that any serious damage to structures would occur (USGS 2005).

Radon gas is a geologic hazard that could potentially be present at Grand Forks AFB because radon gas is naturally high in North Dakota. Radon surveys were conducted from 1988 to 1993 by the NDDH and Consolidated Laboratories, who partnered with the USEPA. USEPA has established a guidance radon level of 4 picoCuries per liter (pCi/L) in indoor air for residences. Radon gas accumulations greater than 4 pCi/L are considered to represent a health risk to occupants. In Grand Forks County, radon levels were present at 10 to 12 pCi/L. In the MFH area, 63 percent of the units sampled had radon levels greater than the recommended action level of 4 pCi/L (see **Section 3.10.2** for a discussion on radon). Ventilation systems to dissipate radon were installed in housing that contained radon above the recommended action level (GFAFB 2009c). The MFH units with radon above the recommended action level were older housing units. As new units were constructed and sampled, radon levels ranged from 2 to 4 pCi/L. Reoccurring testing should be conducted to ensure ventilation systems are properly maintaining radon levels below 4 pCi/L. See **Section 3.10.2** for a detailed discussion on radon.

Table 3-7. Properties of Soils Mapped at the Site of the Proposed Action

Mapping Unit	Texture	Housing Area	Farmland Classification	Construction Limitations
Antler	silty clay loam (0 to 1 percent slopes)	Prairie View Court, Lewis & Clark Trail, dog park	Not prime farmland soil	Somewhat limited for building construction due to shrink-swell potential.
Embden	fine sandy loam (2 to 6 percent slopes)	PVNP	Prime farmland soil	Somewhat limited due to depth to saturated zone.
Gilby	loam (0 to 1 percent slopes)	Redwood, Lewis & Clark Trail, Holly, dog park	Prime farmland soil	Not rated for limitations by NRCS.
Glyndon	silt loam (0 to 1 percent slopes)	PVNP, Holly, Red River Crossing, Roughrider Way, Dakota Skies	Prime farmland soil	Somewhat limited for building construction due to shrink-swell potential.
Hamar	sandy loam (0 to 1 percent slopes)	Roughrider Way	Not prime farmland soil	Very limited for building construction due to ponding and depth to saturated zone.
Rockwell	fine sandy loam (0 to 1 percent slopes)	PVNP	Prime farmland soil if drained	Very limited due to ponding and depth to saturated zone.
Towner	fine sandy loam (1 to 3 percent)	PVNP	Farmland soil of statewide importance	Somewhat limited due to depth to saturated zone.
Wyndmere-Tiffany	fine sandy loam (0 to 2 percent slopes)	PVNP, Lewis & Clark Trail, Redwood, Red River Crossing, Holly, Roughrider Way, Dakota Skies, Whitetail Range, Northern Lights Estates, Meadowlark Manor	Prime farmland soil if drained	Somewhat limited due to depth to saturated zone.
Zell-Gardena	silt loam (1 to 6 percent slopes)	Dakota Skies	Prime farmland soil	Somewhat limited due to depth to saturated zone.

3.4.3 Environmental Consequences

3.4.3.1 Evaluation Criteria

Protection of unique geological features, minimization of soil/sediment erosion, and the siting of facilities in relation to potential geologic hazards are considered when evaluating potential effects of a proposed action on geological resources. Generally, adverse effects can be avoided or minimized if proper

construction techniques, erosion-control measures, and structural engineering design are incorporated into project development.

Effects on geological resources were assessed by evaluating the following:

- Potential to destroy unique geological features
- Potential for soil erosion
- Proximity to or impact on geologic hazards (such as locating a proposed action in a seismic zone)
- Potential to affect soil or geological structures that control groundwater quality or groundwater availability
- Alteration of soil structure or function.

3.4.3.2 Proposed Action

No significant effects on geology or soils would be expected from implementing the Proposed Action.

Topography. Long-term, negligible, adverse effects would be expected on the natural topography as a result of projects associated with the Proposed Action. Modification of existing microtopography would occur as a result of grading, excavation, and filling to accommodate demolition and construction activities. Impacts would be expected to be negligible because the natural microtopography has been previously disturbed by past development activities.

Geology. Long-term, negligible effects on geological resources would be expected to result from implementing the Proposed Action. The surficial geology at the site of the Proposed Action has been altered previously through grading and recontouring activities, and therefore impacts on geological resources would be anticipated to be negligible.

Soils. Short- and long-term, minor, adverse effects on soils would be expected from implementation of the Proposed Action. The primary short-term effects would occur during demolition activities when vegetation is cleared and the earth is bare. Additional ground-disturbing activities could occur in association with renovation of existing MFH units and any construction activities. However, soils have been previously disturbed during initial construction of MFH units, so effects would be expected to be minor. Best management practices (BMPs) would be implemented during construction and demolition activities, and approved erosion and sediment control plans (ESCPs) and SWPPPs would be followed to reduce effects of increased impervious surfaces. Erosion and sediment control techniques could include soil erosion-control mats, silt fences, straw bales, diversion ditches, riprap channels, water bars, water spreaders, and sediment basins, and would be used as appropriate. Section 438 of the Energy Independence and Security Act (EISA) would be adhered to so that pre- and post-development hydrology would be equal.

Long-term, minor, beneficial effects on soils would be expected upon completion of all projects associated with the Proposed Action. Impervious surfaces would decrease as a result of demolition of MFH units and pavements, resulting in a decrease of 413,604 square feet (ft^2) of impervious surfaces. Construction of group-desired features such as a community center, library space, indoor playground, splash park, and roads and impervious trails would be expected to create a total of impervious surfaces by approximately 80,000 ft^2. Overall, impervious surfaces would decrease by approximately 155,981 ft^2. A decrease in impervious surfaces would result in long-term, beneficial impacts on soils if vegetation is reestablished. Additional vegetation would be beneficial to soils as vegetation reduces soil erosion and subsequent sedimentation. A long-term decrease in impervious surfaces associated with removal of

structures would be expected to reduce volume and velocity of storm water runoff and associated potential erosion and offsite transport of sediments. Please see **Section 3.5** for a discussion on water resources.

All soils mapped at the site of the Proposed Action are rated as limited for construction activities. Shrink-swell soils are mapped within the Prairie View Court neighborhood and PVNP, and soils within the remaining neighborhoods are rated as limited for construction due to depth to saturation; therefore, site-specific soil surveys should be conducted prior to any construction or outdoor renovation activities to determine the breadth and severity of any engineering limitations and requirements, and to determine appropriate BMPs or mitigation techniques.

ESCPs would be developed and implemented both during and following site development to contain soil and storm water runoff onsite, and would reduce the potential for adverse effects associated with erosion and sedimentation and transport of sediments in runoff. Storm water runoff would be in compliance with Section 438 of the EISA and the CWA Final Rule regarding non-numeric effluent limitations (described in **Section 3.5.1**). Short-term, adverse effects would be minimized with implementation of BMPs, including wetting of soils. Wetting of soils would occur on a daily basis as needed to prevent erosion and generation of dust (see discussion on air quality in **Section 3.3.3**).

Construction, demolition, or outdoor renovation activities that disturb 20 or more acres as of August 1, 2011, would need to comply with the maximum daily turbidity limitation of 280 nephelometric turbidity units (ntu) as outlined in the CWA Final Rule. Construction, demolition, or outdoor renovation activities that disturb 10 or more acres of land as of February 2, 2014, would need to monitor discharges to ensure compliance with effluent limitations as specified by the permitting authority. Turbidity limitations and monitoring requirements could be avoided if construction, demolition, or outdoor renovation activities are phased to reduce acreages disturbed simultaneously to less than 20 and 10 acres, respectively.

No effects from radon gas would be anticipated as existing MFH units with radon levels above 4 pCi/L have ventilation systems. Radon testing requirements would become the responsibility of the PO upon commencement of the lease.

3.4.3.3 No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented and no impacts on geological resources and soils would be expected.

3.5 Water Resources

3.5.1 Definition of the Resource

Water resources are natural and man-made sources of water that are available for use by and for the benefit of humans and the environment. Water resources relevant to Grand Forks AFB's location in North Dakota include groundwater, surface water, floodplains, and wetlands. Evaluation of water resources examines the quantity and quality of the resource and its demand for various purposes. Hydrology concerns the distribution of water to water resources through the processes of evapotranspiration, atmospheric transport, precipitation, surface runoff and flow, and subsurface flow. Hydrology results primarily from temperature and total precipitation that determine evapotranspiration rates, topography that determines rate and direction of surface flow, and soil and geologic properties that determine rate of subsurface flow and recharge to the groundwater reservoir.

Groundwater. Groundwater is water that exists in the saturated zone beneath the earth's surface, and includes underground streams and aquifers. It is an essential resource that functions to recharge surface water and is used for drinking, irrigation, and industrial processes. Groundwater typically can be described in terms of depth from the surface, aquifer or well capacity, water quality, recharge rate, and surrounding geologic formations.

Groundwater quality and quantity are regulated under several programs. The Federal Underground Injection Control regulations, authorized under the Safe Drinking Water Act (SDWA), require a permit for the discharge or disposal of fluids into a well. The Federal Sole Source Aquifer regulations, also authorized under the SDWA, protect aquifers that are critical to water supply.

Surface Water. Surface water resources generally consist of wetlands, lakes, rivers, and streams. Surface water is important for its contribution to the economic, ecological, recreational, and human health of a community or locale. Waters of the United States are defined within the CWA, as amended, and jurisdiction is addressed by the USEPA and the USACE. These agencies assert jurisdiction over (1) traditional navigable waters, (2) wetlands adjacent to navigable waters, (3) nonnavigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months), and (4) wetlands that directly abut such tributaries. Section 404 of the CWA authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredge or fill into waters of the United States including wetlands. Encroachment into waters of the United States and wetlands requires permits from the state and the Federal government. Wetland hydrology is discussed within this section. **Section 3.6** provides a discussion of wetland habitat occurring within the action areas and adjacent wetlands that might be affected by the actions being considered. A water body can be deemed impaired if water quality analyses conclude that exceedances of the water quality standards established by the CWA occur. The CWA requires that states establish a Section 303(d) list to identify impaired waters and establish Total Maximum Daily Loads (TMDLs) for the source(s) causing the impairment. A TMDL is the maximum amount of a substance that can be assimilated by a water body without causing impairment. The CWA also mandated the National Pollutant Discharge Elimination System (NPDES) program, which regulates the discharge of point (end of pipe) and nonpoint (storm water) sources of water pollution and requires a permit for any discharge of pollutants into waters of the United States.

Storm water is an important component of surface water systems because of its potential to introduce sediments and other contaminates that could degrade surface waters. Proper management of storm water flows, which can be intensified by high proportions of impervious surfaces associated with buildings, roads, and parking lots, is important to the management of surface water quality and natural flow characteristics. Prolonged increases in storm water volume and velocity associated with development and increased impervious surfaces has potential to impact adjacent streams as a result of stream bank erosion and channel widening or down cutting associated with the adjustment of the stream to the change in flow characteristics. Storm water management systems are typically designed to contain runoff onsite during construction, and to maintain predevelopment storm water flow characteristics following development through either the application of infiltration or retention practices. Failure to size storm water systems appropriately to hold or delay conveyance of the largest predicted precipitation event often leads to downstream flooding and the environmental and economic damages associated with flooding.

The USEPA issued a Final Rule for the CWA concerning technology-based Effluent Limitations Guidelines and New Source Performance Standards for the Construction and Development point source category. All NPDES storm water permits issued by the USEPA or states must incorporate requirements established in the Final Rule. This Rule is effective February 1, 2010, and will be phased in over 4 years. All new construction sites are required to meet the non-numeric effluent limitations and design, install,

and maintain effective erosion and sedimentation controls, including the following:

- Control storm water volume and velocity to minimize erosion
- Control storm water discharges including both peak flow rates and total storm water volume
- Provide and maintain natural buffers around surface waters, direct storm water to vegetated areas to increase sediment removal, and maximize storm water infiltration where feasible (e.g., silt fences)
- Minimize erosion at outlets and downstream channel and stream bank erosion
- Minimize soil compaction and preserve topsoil where feasible.

In addition, construction site owners and operators that disturb 1 or more acres of land are required to use BMPs to ensure that soil disturbed during construction activities does not pollute nearby water bodies. Effective 1 August 2011, construction activities disturbing a total of 20 or more acres at one time, including noncontiguous land disturbances that take place at the same time and are part of a larger common plan of development, must comply with the numeric effluent limitation for turbidity in addition to the non-numeric effluent limitations. The maximum daily turbidity limitation will be 280 ntu. On 2 February 2014, construction site owners and operators that disturb 10 or more acres of land are required to monitor discharges to ensure compliance with effluent limitations as specified by the permitting authority. The USEPA's limitations are based on its assessment of what specific technologies can reliably achieve. Permittees can select management practices or technologies that are best suited for site-specific conditions.

Construction activities, such as clearing, grading, trenching, and excavating, disturb soils and sediment. If not managed properly, disturbed soils and sediments can easily be washed into nearby water bodies during storm events, where water quality is reduced. Section 438 of the EISA (42 U.S.C. 17094) establishes into law new storm water design requirements for Federal construction projects that disturb a footprint of greater than 5,000 ft^2 of land. EISA Section 438 requirements are independent of storm water requirements under the CWA. The project footprint consists of all horizontal hard surface and disturbed areas associated with project development. Under these requirements, predevelopment site hydrology must be maintained or restored to the maximum extent technically feasible with respect to temperature, rate, volume, and duration of flow. Predevelopment hydrology shall be modeled or calculated using recognized tools and must include site-specific factors such as soil type, ground cover, and ground slope. Site design shall incorporate storm water retention and reuse technologies such as bioretention areas, permeable pavements, cisterns/recycling, and green roofs to the maximum extent technically feasible. Post-construction analyses shall be conducted to evaluate the effectiveness of the as-built storm water reduction features (DOD 2010a). These regulations have been incorporated into applicable DOD Unified Facilities Criteria (UFC) in April 2010, which stated that low-impact development (LID) features would need to be incorporated into new construction activities to comply with the restrictions on storm water management promulgated by EISA Section 438. LID is a storm water management strategy designed to maintain site hydrology and mitigate the adverse impacts of storm water runoff and nonpoint source pollution. LIDs can manage the increase in runoff between pre- and post-development conditions on the project site through interception, infiltration, storage, and/or evapotranspiration processes before the runoff is conveyed to receiving waters. Examples of the methods include bioretention, permeable pavements, cisterns/recycling, and green roofs (DOD 2010b). Additional guidance is provided in the USEPA's *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act* (USEPA 2009a).

Floodplains. Floodplains are areas of low-level ground present along rivers, stream channels, or coastal waters. The living and nonliving parts of natural floodplains interact with each other to create dynamic

systems in which each component helps to maintain the characteristics of the environment that support it. Floodplain ecosystem functions include natural moderation of floods, flood storage and conveyance, groundwater recharge, nutrient cycling, water quality maintenance, and diversification of plants and animals. Floodplains provide a broad area to spread out and temporarily store floodwaters. This reduces flood peaks and velocities and the potential for erosion. In their natural vegetated state, floodplains slow the rate at which the incoming overland flow reaches the main water body (FEMA 1986).

Floodplains are subject to periodic or infrequent inundation due to rain or melting snow. Risk of flooding typically hinges on local topography, the frequency of precipitation events, the size of the watershed above the floodplain, and upstream development. Flood potential is evaluated by the Federal Emergency Management Agency (FEMA), which defines the 100-year floodplain as an area within which there is a 1 percent chance of inundation by a flood event in a given year. Certain facilities inherently pose too great a risk to be in either the 100- or 500-year floodplain, such as hospitals, schools, or storage buildings for irreplaceable records. Federal, state, and local regulations often limit floodplain development to passive uses, such as recreational and preservation activities, to reduce the risks to human health and safety.

EO 11988, *Floodplain Management*, requires Federal agencies to determine whether a proposed action would occur within a floodplain. This determination typically involves consultation of FEMA Flood Insurance Rate Maps (FIRMs), which contain enough general information to determine the relationship of the project area to nearby floodplains. EO 11988 directs Federal agencies to avoid floodplains to the maximum extent possible wherever there is a practicable alternative. In accomplishing this objective, "each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by flood plains in carrying out its responsibilities" for the following actions:

- Acquiring, managing, and disposing of Federal lands and facilities
- Providing federally undertaken, financed, or assisted construction and improvements
- Conducting Federal activities and programs affecting land use, including water and related land resources planning, regulation, and licensing activities.

Wetlands. Wetlands perform several hydrologic functions, including water quality improvement, groundwater recharge and discharge, pollution mitigation, nutrient cycling, storm water attenuation and storage, sediment detention, and erosion protection. Wetlands are protected as a subset of the waters of the United States under Section 404 of the CWA. The term "waters of the United States" has a broad meaning under the CWA and incorporates deepwater aquatic habitats and special aquatic habitats (including wetlands). The USACE defines wetlands as "those areas that are inundated or saturated with ground or surface water at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (33 CFR Part 329).

Jurisdictional waters of the United States are areas that convey water, exhibit an "ordinary high water mark," and do not meet the three parameter criteria for wetlands. An ordinary high water mark is defined as the line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, or the presence of litter and debris (33 CFR 328.3). The USACE recognizes three distinct types of drainage features: ephemeral drainages, intermittent drainages, and perennial drainages. Ephemeral drainages are fed primarily by storm water. They convey flows during and immediately after storm events; however, they might stop flowing or begin to dry if the interval between storms is sufficiently long. Under recent United States Supreme Court rulings, ephemeral

drainages must also show a significant nexus to navigable waters for it to be considered jurisdictional. Intermittent drainages are fed primarily by groundwater and supplemented by storm water and flow for extended periods, but cease to flow occasionally or seasonally as a result of groundwater drawdown, seepage, or evapotranspiration. Perennial streams flow continuously except during periods of extended drought.

Per Section 401 of the CWA, any applicant for a Federal license or permit to conduct any activity including the construction or operation of facilities, which could result in any discharge into the navigable waters, shall provide the licensing or permitting agency a certification from the state in which the discharge originates or will originate. North Dakota relies on Section 401 water quality certification as its primary form of state-level wetlands regulation. The Section 401 program is administered by the North Dakota Department of Health, Division of Water Quality (NDDH/DWQ). In making certification decisions, the NDDH/DWQ is primarily concerned with the construction and environmental disturbance requirements pertaining to soils, surface waters, and fill materials. A nonregulatory agency policy document requires that "fragile and sensitive areas such as wetlands, riparian zones, delicate flora, or land resources will be protected against compaction, vegetation loss, and unnecessary damage." If a project does not meet this and other minimum requirements of the NDDH/DWQ, the permit is denied, and necessary conditions are communicated before re-application (ELI 2008).

3.5.2 Existing Conditions

Groundwater. Groundwater within Grand Forks County occurs in unconsolidated glacial drift deposits and in rocks of Cretaceous- and Ordovician-age underlying the glacial deposits. Subsurface water flows primarily to the east, and the aquifers present include the Dakota Aquifer and the Emerado Aquifer.

The deepest aquifer is found in the Ordovician-aged Red River Formation. Yield varies depending on joints and fractures within the formation, and the groundwater is very saline. The Dakota aquifer is the principal bedrock aquifer among the Great Plains states providing groundwater to wells at rates ranging from 2 to 50 gallons per minute (gpm). The Dakota aquifer, which is approximately 250 feet bgs, is very saline and is used primarily for livestock watering as it is considered unsuitable for domestic consumption or industrial use. The water level within the aquifer has dropped nearly 20 feet in the past several years due to increased use for agricultural purposes (GFAFB 2005).

The uppermost aquifer is the Emerado Aquifer, a major glacial drift aquifer underlying Grand Forks AFB approximately 50 to 75 feet bgs. Groundwater is confined under an artesian head, and well yields can vary from rates of 50 to 500 gpm. Water quality within the aquifer is poor, with high levels of dissolved solids and salinity. This is potentially attributable to upward seepage of groundwater from bedrock aquifers. The Emerado Aquifer is confined both above and below by a clayey glacial till (GFAFB 2005).

None of the described aquifers are sole-source providers (USEPA 2010b). Potable water for Grand Forks AFB is obtained from surface water sources including the Red River and Red Lake River through the City of Grand Forks (GFAFB 2005).

Surface Water. Surface water surrounding Grand Forks AFB includes rivers, streams, and numerous wetlands (see **Figure 3-3**). Two primary bodies of water are present at Grand Forks AFB: Turtle River and Kellys Slough within the Kellys Slough National Wildlife Refuge (NWR). Just beyond the southern boundary of the installation is Hazen Brook, which flows to the east along the southern side of US 2.

Turtle River flows through the northwestern corner of the installation boundary, meandering in a northeasterly direction. It eventually empties into Lake Winnipeg in Canada via the Red River within the Red River Drainage Basin. Peak flows occur in April, and minimum flows occur in January and February. Turtle River has been classified as a Class 2 stream by the NDDH, with water quality sufficient

to sustain fish populations and suitable for irrigation and recreational purposes (GFAFB 2007b). However, the Turtle River can have high concentrations of total dissolved solids (TDS), particularly calcium and magnesium. A portion of the 100-year floodplain for the Turtle River is present in the northwesternmost corner of the installation. A small portion of floodplain is also present in the southeasternmost corner of the installation, adjacent to the wastewater lagoons.

Kellys Slough NWR is within a wide, marshy floodplain approximately 2 miles from the installation. Surface water runoff is received from the eastern half of Grand Forks AFB; effluent is also received from water treatment lagoons maintained by the installation and located to the east of Grand Forks AFB. Drainage from Kellys Slough NWR flows to the northeast into the Turtle River and eventually into the Red River.

The Red River runs beyond the eastern portion of the installation, approximately 15 miles away. The Red Lake River supplies a portion of the drinking water supply to Grand Forks AFB. The Red Lake River is approximately 15.5 miles to the northeast of the installation.

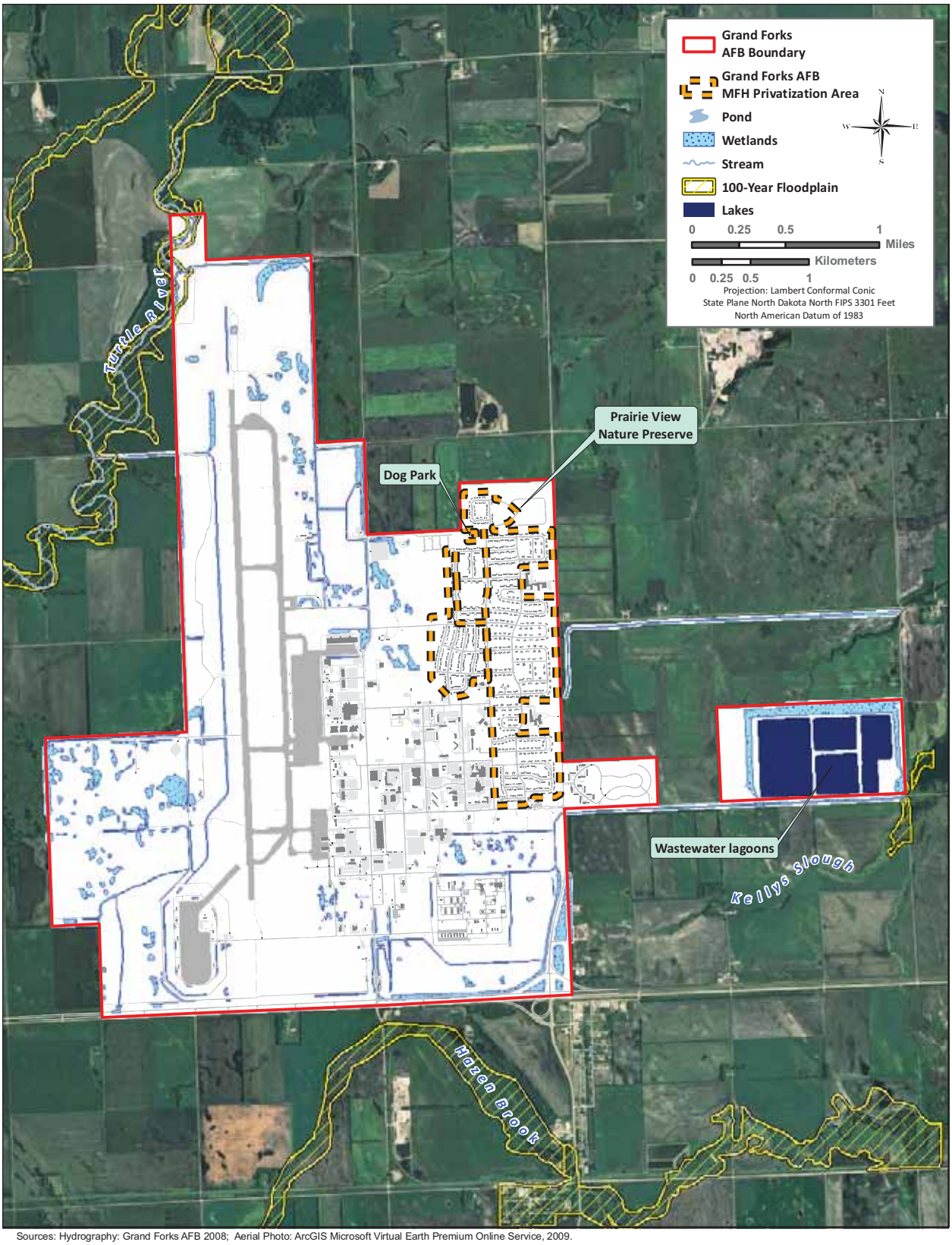
Storm water drainage at Grand Forks AFB occurs through four drainage ditches and nine outfalls including the southeast, northeast, northwest, and west ditches. The outfalls convey drainage into Kellys Slough NWR and eventually into Turtle River. Facilities on Grand Forks AFB discharge sanitary wastewater to sewage treatment lagoons to the east of the main installation. The sewage treatment lagoons are approximately 320 acres and discharge to the east into Kellys Slough (GFAFB 2009d). The sewage treatment lagoons are classified as lakes according to the National Wetlands Inventory (NWI). For a detailed discussion of the sewage treatment lagoons, see **Section 3.9.2**.

Floodplains. The Turtle River is the only river to cross the Grand Forks AFB boundary; therefore, a portion of the 100-year floodplain for the Turtle River is present in the northwesternmost corner of the installation. In addition, there are also floodplains along the southeastern boundary of the sewage treatment lagoons associated with Kellys Slough.

Wetlands. The Red River Basin contains thousands of natural wetlands and prairie potholes. These wetlands have a profound effect on the hydrologic flow regime of streams and the residence time of water within the basin. These wetland areas generally occur in areas of poorly drained soils in shallow depressions formed on glacial and lacustrine plains. Wetlands on Grand Forks AFB occur frequently in drainageways, low-lying depressions, and potholes (see **Figure 3-3**). There are no wetlands delineated within the site of the Proposed Action.

The current total acreages of wetlands that were calculated using GIS data indicate that Grand Forks AFB has 241 wetlands composing 308 acres. Jurisdictional determinations from the USACE expire after 5 years. Most of the installation's jurisdictional determinations are beyond the 5-year lifespan and have expired. It is likely that those wetlands with expired jurisdictional determinations would be determined jurisdictional by the USACE if surveyed again. There are 20 wetlands with current jurisdictional determinations composing approximately 19 acres.

Of the installation's wetlands inventory, palustrine wetlands predominate at 258 acres (84 percent of the inventory). Palustrine wetlands include all nontidal wetlands dominated by trees, shrubs, emergents, mosses, or lichen. There is a 47-acre palustrine emergent/lacustrine wetland north of the installation sewage lagoons. Lacustrine wetlands are situated in a topographic depression or a dammed river channel and lacks trees, shrubs, persistent emergents, emergent mosses, or lichen. The remaining 3 acres consist of riverine wetland present in the northwestern corner of the installation along the Turtle River. Riverine wetlands are those that occur within the river channel and are dominated by emergent vegetation.



Sources: Hydrography: Grand Forks AFB 2008; Aerial Photo: ArcGIS Microsoft Virtual Earth Premium Online Service, 2009.

Figure 3-3. Water Resources at Grand Forks AFB

3.5.3 Environmental Consequences

3.5.3.1 Evaluation Criteria

Evaluation criteria for effects on water resources are based on water availability, quality, and use; existence of floodplains; and associated regulations. A proposed action could have significant effect with respect to water resources if any of the following were to occur:

- Substantially reduce water availability or supply to existing users
- Overdraft groundwater basins
- Exceed safe annual yield of water supply sources
- Substantially affect water quality adversely
- Endanger public health by creating or worsening health hazard conditions
- Threaten or damage unique hydrologic characteristics
- Violate established laws or regulations adopted to protect water resources.

The potential effect of flood hazards on a proposed action is important if such an action occurs in an area with a high probability of flooding.

Determination of the significance of wetland impacts is based on (1) loss of wetland acreage, (2) the function and value of the wetland, (3) the proportion of the wetland that would be affected relative to the occurrence of similar wetlands in the region, (4) the sensitivity of the wetland to proposed activities, and (5) the duration of ecological ramifications. Impacts on wetland resources are considered significant if high value wetlands would be adversely affected or if wetland acreage is lost.

3.5.3.2 Proposed Action

Groundwater. The Proposed Action has the potential for short- and long-term impacts on groundwater. The potential for groundwater contamination would increase during various underground utility (e.g., electric, water) work conducted at the site of the Proposed Action. With implementation of appropriate BMPs during construction, demolition, or renovation activities, the potential for short-term, adverse effects on groundwater is expected to be negligible. All fuels, construction-related materials, and other potentially hazardous materials would be contained and stored appropriately. However, in the event of a spill or leak of construction-related or other potentially hazardous materials, the procedures outlined in the Grand Forks AFB's Spill Prevention, Control, and Countermeasures (SPCC) Plan would be followed to quickly contain and clean up a spill or leak to minimize any adverse effects on groundwater (see **Section 3.10** for a discussion on hazardous materials and wastes). All fuels, construction related products, and other potentially hazardous materials would be contained and stored appropriately. However, in the event of a spill or leak of fuel, construction related products or other potentially hazardous materials then the procedures outlined in Grand Forks AFB's Spill Prevention, Control, and Countermeasures (SPCC) Plan would be followed to quickly contain and clean up a spill or leak (see **Section 3.10** for a discussion on hazardous materials and wastes) to minimize any adverse effects on groundwater. Long-term, beneficial impacts on groundwater quality and recharge from the Proposed Action could occur. It is assumed that an overall decrease in impervious surfaces would slightly decrease storm water runoff to streams and allow percolation of precipitation into soils to increase recharge of the aquifer system. Compliance with local, state, and Federal regulations would minimize these adverse effects.

Surface Water. The Proposed Action would result in short- and long-term, negligible to minor, adverse, and beneficial impacts on surface water resources. Long-term, indirect, beneficial effects could result

from the overall decrease in impervious surfaces at Grand Forks AFB because the number of MFH units would be reduced significantly (i.e., 833 MFH units reduced to 547 MFH units). Impervious surfaces are constructed of impenetrable materials (e.g., stone, asphalt, concrete) that repel water and prevent rainfall or snowmelt from infiltrating soils. Therefore, during rainfall or snowfall events, impervious surfaces increase the volume and accelerate the speed at which water is directed into receiving surface water bodies. The potential for storm water to carry contaminants directly into surface waters is lessened when impervious areas decrease. Less storm water runoff would have a long-term, direct, minor, beneficial effect on surface water and consequently, groundwater quality, in MFH areas, especially if vegetation is reestablished. However, if the Proposed Action increases impervious surface at Grand Forks AFB from the construction of a community center and other desired features, then short- and long-term, negligible to minor, adverse effects would be expected.

Short-term, negligible to minor, adverse impacts on water resources would occur from the use of heavy equipment, which could compact soils and could result in a decrease in soil permeability and water infiltration rates and potential subsequent alteration of drainage patterns. Disturbance of soil and removal of vegetation associated with development could result in erosion of disturbed soils and transport of sediment and other pollutants into nearby water bodies during storm water flow events.

It is assumed that the Proposed Action would decrease impervious surfaces resulting in long-term, beneficial impacts on surface water due to reduced run-off, velocity, and sediment transport. However, if impervious surfaces increase as a result of the Proposed Action, then storm water runoff volume and velocity would be expected to increase slightly resulting in potential adverse effects. This runoff could impact surface water quality of the receiving water body. However, adverse effects would be minimized by implementing BMPs and following an approved ESCP. Under the CWA Final Rule, projects that would disturb more than 1 acre of land would be required to implement BMPs to ensure that soil disturbed during construction activities would not pollute nearby water bodies.

Short-term, direct, minor, adverse effects from construction and demolition activities could result due to increased contaminants via sediment transport in storm water runoff conveyed to surface water bodies. Surface water runoff resulting from demolition, construction, and renovation activities could include contaminants that could impact surface water quality in drainage channels and could also impact groundwater quality as a result of infiltration of contaminated runoff. The level of disturbance is related to the type of contaminant that enters the water system. Increased sediment runoff from construction, demolition, and renovation activities increases surface water turbidity, which can raise water temperature and impede photosynthetic processes. Sediment runoff into surface water also increases the likelihood of contaminant (e.g., heavy metals, excess nutrient concentrations) deposition on the substrate of receiving water bodies.

Overall, construction and demolition activities would have the potential for adverse effects on surface water quality, but the development of a site-specific SWPPP as a component of the NPDES Permit for General Construction Activity would minimize potential for adverse effects. Appropriate BMPs would be implemented and would follow the guidelines provided in documents such as Grand Fork AFB's SWPPP, INRMP, and Federal and state permitting processes. Assuming proper use of BMPs to contain the effects of establishing the Proposed Action including potential nonpoint source pollution to water bodies associated with increased storm water runoff, potential increased erosion and sedimentation, removal of vegetation, and soil compaction, impacts on water resources would be expected to be negligible (refer to **Section 3.4.3** for a discussion of erosion- and sediment-control procedures).

Floodplains. Because no floodplains are in or near the vicinity of the Proposed Action, no direct or indirect impacts would be expected from the Proposed Action.

Wetlands. Because there are no wetlands within the site of the Proposed Action, no direct impacts on wetlands would be expected. The closest wetlands to the site of the Proposed Action are located approximately 800 feet to the west of Parcel 2. In addition, there are off-installation wetlands associated with the drainage ditch to the east of the site of the Proposed Action. Adherence to an ESCP and SWPPP would prevent surface water degradation of these wetlands. Assuming appropriate BMPs are implemented during construction, demolition, and renovation activities, no direct or indirect impacts on surrounding wetlands would be expected. In the event of a spill or leak of fuel or other construction-related products, all fuels and other potentially hazardous materials would be contained and stored appropriately and spill procedures outlined in Grand Forks AFB's SPCC Plan would be followed to contain and clean up a spill quickly (see **Section 3.10** for a discussion on hazardous materials and wastes). With implementation of SPCC Plan requirements, no impacts on surrounding wetlands would be anticipated. Please refer to **Section 3.5.1** for more discussion of erosion and sediment control and storm water management regulations. See **Section 3.6.3** for additional discussion of potential impacts on wetland habitats.

3.5.3.3 No Action Alternative

Under the No Action Alternative, no construction, demolition, or renovations associated with the Proposed Action would occur. Conditions would remain as described in **Section 3.5**; therefore, no impacts on water resources would be expected.

3.6 Biological Resources

3.6.1 Definition of the Resource

Biological resources include native or naturalized plants and animals and the habitats (e.g., grasslands, forests, and wetlands) in which they exist. Protected and sensitive biological resources include listed (threatened or endangered), proposed, and candidate species under the ESA (16 U.S.C. 1536) as designated by the USFWS, state-listed threatened or endangered species, and migratory birds. Sensitive habitats include those areas designated by the USFWS as critical habitat protected by the ESA and sensitive ecological areas as designated by state or Federal rulings. Sensitive habitats also include wetlands, plant communities that are unusual or of limited distribution, and important seasonal use areas for wildlife (e.g., migration routes, breeding areas, crucial summer and winter habitats).

The Federal Noxious Weed Act (P.L. 93-629) mandates control of noxious weeds by limiting possible weed seed transport from infested areas to noninfested sites. EO 13112, *Invasive Species*, requires all Federal agencies to prevent the introduction of invasive species, provide for their control, and minimize their economic, ecological, and human health impacts. Under EO 13112, installations shall not, to the extent practicable, authorize, fund, or carry out management actions that are likely to cause the introduction or spread of invasive species.

Under the ESA, an "endangered species" is defined as any species in danger of extinction throughout all or a significant portion of its range. A "threatened species" is defined as any species likely to become an endangered species in the foreseeable future. The USFWS also maintains a list of species considered to be candidates for possible listing under the ESA. Although candidate species receive no statutory protection under the ESA, the USFWS has attempted to advise government agencies, industry, and the public that these species are at risk and might warrant protection under the ESA.

The Migratory Bird Treaty Act of 1918 (16 U.S.C. 703–712) as amended, and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, require Federal agencies to minimize or avoid impacts on migratory birds listed in 50 CFR 10.13. If design and implementation of a Federal action cannot avoid

measurable negative impact on migratory birds, EO 13186 directs the responsible agency to develop and implement, within 2 years, a Memorandum of Understanding with the USFWS that shall promote the conservation of migratory bird populations.

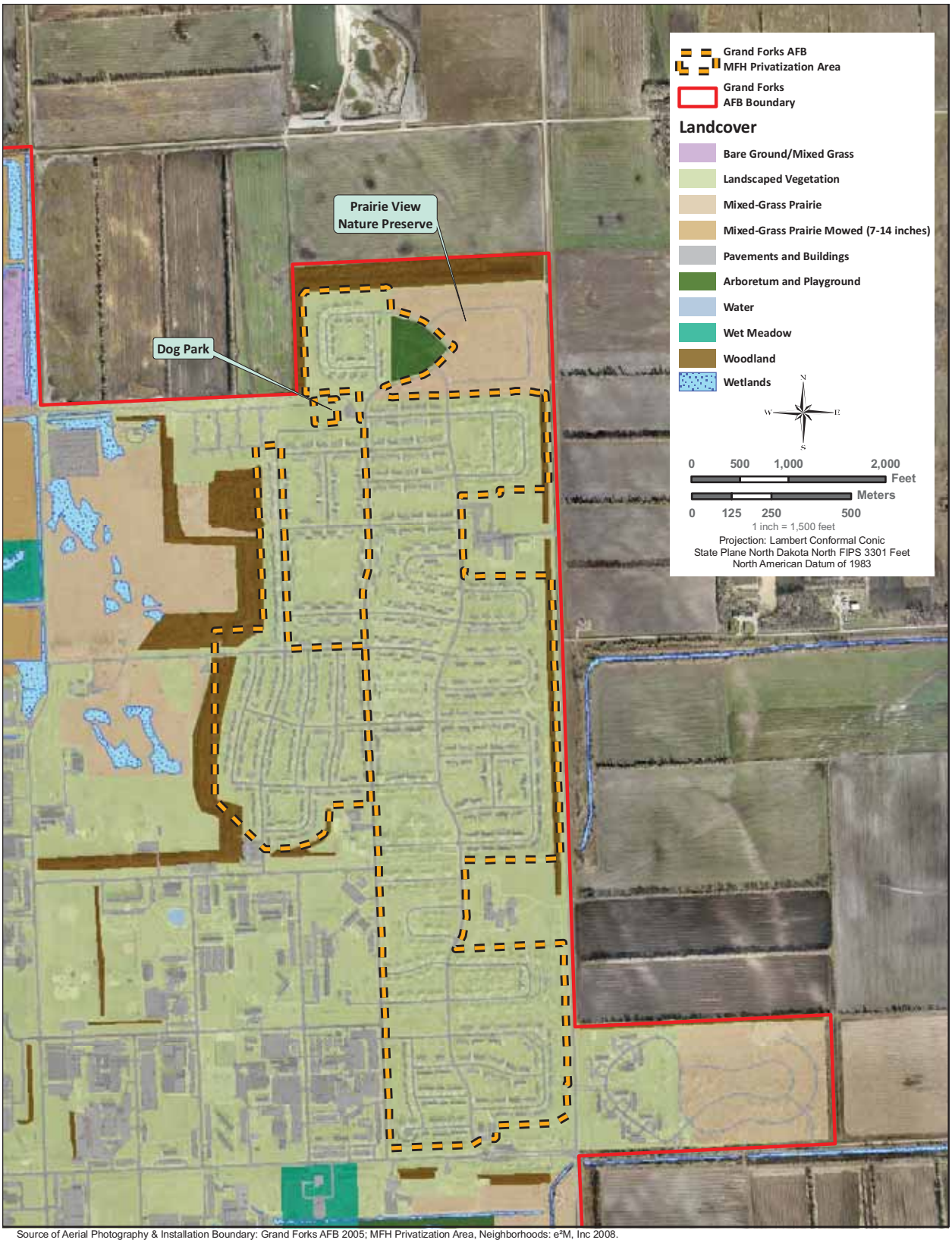
3.6.2 Existing Conditions

Vegetation. General vegetation cover types in the vicinity of the MFH area are shown in **Figure 3-4**. The installation has planted 8,776 trees and shrubs over the past 5 years. Protected plant species are discussed under *Protected and Sensitive Species*.

When the initial construction of Grand Forks AFB was completed in the mid-1950s, most of the installation was planted with a standard mixture of grasses established by the DOD, which included two introduced grass species, smooth brome (*Bromus inermis*) and Kentucky bluegrass (*Poa pratensis*). These two species are still predominant throughout the installation. Large portions of the unimproved areas on Grand Forks AFB support the active cultivation of hay. In addition, 165 acres have been restored to native grasses and are also used for the cultivation of hay. There are no known prairie remnants on Grand Forks AFB; however, some prairie index species, such as coneflowers (Asteraceae), are found in the unimproved and semi-improved areas (GFAFB 2005). Grand Forks AFB is restoring 325 acres of native grasses, including a 160-acre hay land area around the MSA and 40 acres in the PVNP east of the Prairie View Court neighborhood (see **Figure 2-2**).

The PVNP, located adjacent to the Prairie View Court MFH neighborhood, is a conservation-developed property including restored prairie lands, a butterfly garden, an arboretum, and associated shelterbelts that are used for environmental education with interpretive signs and bird houses. The PVNP was seeded in native mixed-grass species in 2000 and in a wildflower seed mix in 2004 (GFAFB 2005). Including the surrounding shelterbelt, PVNP is approximately 53.18 acres. PVNP has two management zones: semi-improved and minimal disturbance. These areas have the same goals, including eliminating noxious and invasive weeds, increasing biodiversity, tree maintenance (if applicable), managing turf (if applicable), and summer dormancy (to reduce browning of turf). Mowing is employed in the PVNP only as conditions warrant to control weed species or target specific biennial plants, and is not conducted on an annual basis. Management and maintenance of the PVNP is conducted by Grand Forks AFB in accordance with the INRMP. A 1-mile walking trail and asphalt road, remnant from an old residential neighborhood, weave throughout the PVNP. The PVNP also has an entrance sign with landscaping installed in 2004 by the Girl Scouts. A tree arboretum, with several species of planted trees, is in the eastern portion of the Prairie View Court MFH neighborhood; however it is still part of the PVNP. This tree arboretum will continue to be managed and maintained in accordance with the INRMP. Bow hunting is allowed in the shelterbelt of the PVNP, pursuant to the provisions in the INRMP (GFAFB 2005).

Turfgrass and landscaped areas dominate the MFH area and cantonment area. Improved turfgrass areas on Grand Forks AFB are dominated by red fescue (*Festuca rubra*) and Kentucky bluegrass. Trees planted within the MFH area are primarily blue spruce (*Picea pungens*), green ash (*Fraxinus pennsylvanica*), and Lombardy poplar (*Populus nigra*). One of several wooded shelterbelts planted to help protect housing and other main cantonment areas from wind, cold, and snow is situated along the western boundary of the MFH area. This shelterbelt is composed mostly of American elm, green ash, Russian olive (*Elaeagnus angustifolia*), and cottonwoods (*Populus* spp.). The use of Russian olive at Grand Forks AFB has been eliminated due to their massive seed production and ability to rapidly overrun an area to the detriment of native species (GFAFB 2005).



Source of Aerial Photography & Installation Boundary: Grand Forks AFB 2005; MFH Privatization Area, Neighborhoods: e²M, Inc 2008.

Figure 3-4. Vegetation Cover on Grand Forks AFB in Vicinity of MFH

Drainageways and low-lying depressions on Grand Forks AFB have limited and localized wetland habitat. Species most commonly associated with these wetland areas are hairyfruit sedge (*Carex trichocarpa*), needle spike-rush (*Eleocharis acicularis*), flat-stem spike-rush (*E. compressa*), pale spike-rush (*E. palustris*), Baltic rush (*Juncus balticus*), grass-leaf rush (*J. marginatus*), knotted rush (*J. nodosus*), poverty rush (*J. tenuis*), Torrey's rush (*J. torreyi*), and chairmaker's bulrush (*Scirpus americanus*) (GFAFB 2005).

Noxious weeds have been an increasing issue at Grand Forks AFB. Weed growth has expanded in areas that were formerly improved lawns and have since changed to semi-improved and unimproved lands. The current list of noxious weeds on Grand Forks AFB includes six state-listed species: absinth wormwood (*Artemisia absinthium*), Canada thistle (*Cirsium arvense*), spotted knapweed (*C. maculosa*), field bindweed (*Convolvulus arvensis*), leafy spurge (*Euphorbia esula*), musk thistle (*Carduus nutans;* and one county-listed species, kochia (*Bassia scoparia*).

Landscaped/improved areas, including those within the MFH and cantonment area, continue to struggle with invasive and noxious weeds. Grand Forks AFB has an ongoing management program in place to control noxious weeds and invasive species. Current management of improved/landscaped areas target spraying of dandelions and Canada thistle. Preemergent weedkillers are also applied. The unimproved areas are slowing being naturalized by interseeding and restoring areas with native vegetation, which is a better competitor against noxious and invasive weeds. Weed growth is thought to have spread through vehicular movement, construction equipment and nonadherance to weed best management practices. In areas where native vegetation is being established, weed control has improved.

The areas most susceptible to weed invasion are semi-improved areas where no herbicides are applied and with limited mowing. In addition, because the natural resource surveys concluded that noxious weeds are present, a conservation contract was developed to address the issue in prairie lands on the installation to comply with the law and the current INRMP. Compliance with Federal and state laws require the development of an installationwide noxious weed control and monitoring program (GFAFB 2005).

Wildlife. The installation supports a remarkable diversity of wildlife given its size and location within an agricultural matrix. The Turtle River riparian corridor, PVNP, grassland areas on the western side of the installation, and the lagoons to the east of the installation all provide important habitat for native plant and wildlife species (GFAFB 2004). Protected wildlife species are discussed under *Protected and Sensitive Species*.

Common mammals on the installation include white-tailed deer (*Odocoileus virginianus*), eastern cottontail (*Silvilagus floridanus*), white-tailed jackrabbit (*Lepus townsendii*), coyote (*Canis latrans*), red fox (*Vulpes vulpes*), beaver (*Castor canadensis*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), badger (*Taxidea taxus*), plains pocket gopher (*Geomys bursarius*), northern pocket gopher (*Thomomys talpoides*), muskrat (*Ondatra zibethica*), squirrels (*Sciurus* spp. and *Spermophilus* spp.), meadow vole (*Microtus pennsylvanicus*), shrews (*Sorex* spp.), white-footed mouse (*Peromyscus leucopus*), deer mouse (*P. maniculatus*), meadow jumping mouse (*Zapus hudonius*), silver-haired bat (*Lasionycteris noctivagans*), and red bat (*Lasiurs borealis*) (GFAFB 2005, GFAFB 2004). Six bat houses have been installed near the horse stables and pastures to the west of the MFH area; four of these were installed as an Eagle Scout project in 2007 (GFAFB 2005).

There are 229 bird species known to occur on Grand Forks AFB with 105 breeding species recorded (GFAFB 2011). The PVNP provides habitat for several species of grassland and early-successional songbird species. The arboretum in the eastern portion of the Prairie View Court MFH neighborhood likely provides suitable nesting habitat for several tree-nesting species. Eastern bluebird (*Sialia sialis*) nest boxes have been installed in the PVNP, north of the MFH privatization area, and near the horse

stables and pastures, west of the MFH privatization area. Twelve purple martin (*Progne subis*) houses have also been installed within the MFH neighborhoods (GFAFB 2005).

Common reptiles and amphibians occurring on Grand Forks AFB include the western painted turtle (*Chrysemys picta belli*), common garter snake (*Thamnophis sirtalis*), tiger salamander (*Ambystoma tigrinum*), wood frog (*Rana sylvatica*), northern leopard frog (*Rana pipiens*), and Dakota toad (*Bufo hemiophys*).

A butterfly garden was constructed in the PVNP to improve habitat by using host plants and nectar plants and assists in maintaining current populations and species of butterflies and other pollinators (GFAFB 2005).

Minnows and carp have been identified on Grand Forks AFB (GFAFB 2005, GFAFB 2007c). In addition, some game fish species occur in portions of the Turtle River, which crosses the northwesternmost portion of Grand Forks AFB, including northern pike (*Esox lucius*), white sucker (*Catostomus commersonii*), rock bass (*Ambloplites rupestris*), black bullhead (*Ameiurus melas*), and channel catfish (*Ictalurus punctatus*). The State of North Dakota stocks the Turtle River upstream of Grand Forks AFB with brown trout (*Salmo trutta*) and rainbow trout (*Oncorhynchus mykiss*) each spring near Turtle River State Park (GFAFB 2005).

Protected and Sensitive Species. No federally listed threatened or endangered species are known to occur on Grand Forks AFB (GFAFB 2005). There is no critical or significant habitat present on Grand Forks AFB. Species listed by the USFWS as having the potential to reside in the vicinity include the gray wolf (*Canis lupus*). The gray wolf, federally listed as endangered, is infrequently observed in North Dakota and no records of its presence on Grand Forks AFB exist (GFAFB 2006a). Per Grand Fork AFB's INRMP, two Federal candidates for listing under the ESA, the Dakota skipper (*Hesperia dacotae*) and the regal fritillary (*Speyeria idalia*), in addition to other state-listed prairie butterfly species, have the potential to be present and managed to enhance their numbers on the installation (GFAFB 2005). It is likely that the management for these species would particularly occur within the butterfly garden and native grassland habitat within the PVNP.

The North Dakota Natural Heritage Program compiled the State Threatened and Endangered List. Five major criteria are considered in evaluating a species: (1) occurrence, (2) vulnerability, (3) type(s) of threat, (4) degree of protection, and (5) taxonomy. A species is considered critically endangered if it received a state rank of S1 (critically imperiled), endangered if it received a state rank of S2 (imperiled), or threatened if it received a state rank of S3 (vulnerable). Two species found on the installation during the 2007 field season are considered to be state-listed as endangered. These include the bald eagle (*Haliaeetus leucocephalus*), with a state rank of S1 (critically imperiled), and the merlin (*Falco columbarius*), with a state rank of S2 (imperiled). Seven species found on the installation during the 2007 field season have a state rank of S3 (vulnerable) and are considered threatened in North Dakota. These include the chestnut-sided warbler (*Dendroica pensylvanica*), common goldeneye (*Bucephala clangula*), green heron (*Butorides virescens*), hooded merganser (*Lophodytes cucullatus*), Philadelphia vireo (*Vireo philadelphicus*), swamp sparrow (*Melospiza georgiana*), and white-throated sparrow (*Zonotrichia albicollis*) (USAF 2008b). The bald eagle, common goldeneye, green heron, and hooded merganser were detected near the open-water lagoons to the east of the main installation. The Philadelphia vireo was using a shelterbelt on the installation. The chestnut-sided warbler and the white-throated sparrow were observed in the riparian woodland. The swamp sparrow was observed in a shallow marsh. A merlin was observed in a neighborhood. Several merlin nests have been observed in previous years in the City of Grand Forks and the surrounding area (USAF 2008b).

Grand Forks AFB conducted a vegetation survey during the fall of 2008, spring of 2009, and the summer of 2009. In addition, these surveys also references past surveys completed in 1993, 1994, and 2004.

These surveys included inventories of protected and rare plant communities on Grand Forks AFB. During these surveys, 304 plant species were identified on Grand Forks AFB, including 145 new plant identifications (GFAFB 2010c). The Grand Forks AFB plant inventory identified four state-ranked species including the lesser yellow lady's slipper (*Cypripedium parviflorum var. parviflorum*), classified as state imperiled/vulnerable; White lady's slipper (*Cypripedium candidum*), classified as state imperiled/vulnerable; Dutchman's breeches (*Dicentra cucullaria*), classified as state critically imperiled; and Eastern prickly gooseberry (*Ribes cynosbati*), classified as state vulnerable (GFAFB 2010c). The MFH area is not within the vicinity of these plant species. No federally threatened or endangered plant species were identified on Grand Forks AFB.

The North Dakota Game and Fish Department has identified 100 species as Species of Conservation Priority as part of its *Comprehensive Wildlife Conservation Strategy*. There are 22 bird species and 2 mammal species that have been observed on Grand Forks AFB that are included in North Dakota's 100 Species of Conservation Priority (see **Appendix G**). Level I species are those having a high level of conservation priority because of declining status in North Dakota or across their range; or have a high rate of occurrence in North Dakota, constituting the core of the species breeding range, but might be at risk rangewide. Level II species are those having a moderate level of conservation priority. Level III species are those having a moderate level of conservation priority but are believed to be peripheral or nonbreeding in North Dakota. Eleven conservation priority species on Grand Forks AFB are classified as Level I species, 12 are classified as Level II, and 1 is classified as Level III.

Migratory birds, as listed in 50 CFR Part 10.13, are protected under the Migratory Bird Treaty Act of 1918 (16 U.S.C. 703–712), as amended, and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*. There are 229 bird species known to occur on Grand Forks AFB (GFAFB 2011). The vast majority of these bird species are migratory birds as defined in 50 CFR Part 10.13. Numerous migrant species use the various habitats on the installation, either as a migratory stopover habitat or for breeding. Grand Forks AFB provides breeding habitat for 105 species of birds (GFAFB 2011).

Although bald eagles were recently delisted from the ESA, they are still protected under the Bald and Golden Eagle Protection Act of 1984. The bald eagle migrates statewide during the spring and fall, but it generally follows the major river systems of the state. Bald eagles were observed to use the sewage lagoons to the east of the main installation for fall forage from 2003 through 2007 (GFAFB 2008c). No critical habitat for this species has been designated in Grand Forks County.

3.6.3 Environmental Consequences

3.6.3.1 Evaluation Criteria

The level of impact on biological resources is based on (1) the importance (i.e., legal, commercial, recreational, ecological, or scientific) of the resource, (2) the proportion of the resource that would be affected relative to its occurrence in the region, (3) the sensitivity of the resource to the proposed activities, and (4) the duration of ecological ramifications. An impact on a biological resource would be considered significant if it was to cause a violation of the laws and regulations pertaining to biological resources (see **Appendix B**), if species or habitats of high concern are adversely affected over relatively large areas, or if disturbances cause reductions in population size or distribution of a species of special concern. A habitat perspective is used to provide a framework for analysis of general classes of effects (i.e., removal of critical habitat, noise, human disturbance).

Ground disturbance and noise associated with construction or demolition activities might directly or indirectly cause potential effects on biological resources. Direct effects from ground disturbance were evaluated by identifying the types and locations of potential ground-disturbing activities in correlation to

important biological resources. Mortality of individuals, habitat removal, and damage or degradation of habitats are impacts that might be associated with ground-disturbing activities. Noise associated with a proposed action might be of sufficient magnitude to result in the direct loss of individuals and reduce reproductive output within certain ecological settings. Ultimately, extreme cases of such stresses could have the potential to lead to population declines or local or regional extinction. To evaluate effects, considerations were given to the number of individuals or critical species involved, amount of habitat affected, relationship of the area of potential effect to total available habitat within the region, type of stressors involved, and magnitude of the effects.

3.6.3.2 Proposed Action

Vegetation. The Proposed Action would be expected to result in short-term, negligible, adverse effects on vegetation on Grand Forks AFB. The majority of vegetation within the site of the Proposed Action is modified, landscaped, and mowed regularly. Vegetation that could be disturbed within the MFH privatization area includes landscaping such as trees, shrubs, and turf lawns. Short-term, negligible, adverse effects on vegetation would be expected from temporary disturbances during demolition activities (e.g., trampling and removal). This vegetation would be expected to regenerate or be replanted once demolition activities have ceased. The Demolition Plan should include guidelines associated with replacing trees that are removed during demolition activities. After facilities deemed inadequate are demolished, the PO would grade the project area for proper drainage and seed all areas not scheduled for future developments. As there have been no observations made of any unique native vegetative species occurring within the MFH privatization area, all impacts on vegetation would be expected to be negligible.

During and immediately following construction, demolition, or renovation activities that result in ground disturbances, soils would be exposed and vegetation would be sparse in some areas, thus allowing opportunities for noxious weeds to establish in those areas. Construction and demolition activities create disturbances that can increase the spread of noxious weeds. The spread of noxious weeds is controlled by avoiding activities in or adjacent to heavily infested areas, removing seed sources and propagules from the site prior to conducting activities, or limiting operations to non-seed-producing seasons. Following activities that expose soils, the spread of noxious weeds can be controlled by covering the area with weed seed-free mulch or seeding the area with native species. Covering the soil reduces the germination of weed seeds, maintains soil moisture, and minimizes erosion. Under the Proposed Action, once demolition has ceased, the disturbed areas would be seeded or replanted in sod and maintained to prevent the establishment of invasive plant species during the lease period. Therefore, noxious weeds would not be expected to become permanently established in disturbed areas and no long-term, adverse impacts from noxious weed establishment within the demolition sites would be expected.

Natural resources on Grand Forks AFB would not be conveyed to the PO, but would continue to be owned by the Government. Grand Forks AFB would continue to be responsible for natural resources management in accordance with the INRMP.

Long-term, minor to moderate, adverse effects on vegetation and management of invasive species could occur if undeveloped areas within the MFH privatization areas are not maintained to prevent natural establishment of invasive plant species during implementation of the Proposed Action. Methods used by the PO to manage vegetation and prevent natural establishment of invasive plant species (e.g., herbicide and manual weed control, controlled burns) would be consistent with INRMP management practices.

Office of the Secretary of Defense Policy Memorandum, *Implementation of Sikes Act Improvement Amendments: Supplemental Guidance Concerning Leased Lands* (May 17, 2005), requires INRMPs to "address resource management on all of the lands for which the subject installation has real property accountability, including lands occupied by…lessees. DOD is answerable to the public for

the…management of natural resources on all of the lands that have been entrusted to the [DOD] (DOD 2005)." Therefore, USAF installations retain responsibility for natural resources on leased property for MFH privatization. The requirements specified in the INRMP for invasive plant species management would be implemented by Grand Forks AFB. The PO would be required to allow access to Grand Forks AFB personnel to accomplish management actions. Ultimately, adverse impacts on vegetation and invasive species management from the Proposed Action would not be expected as invasive species control techniques would continue to be implemented within the MFH privatization area.

Wildlife. The Proposed Action would have direct, short-term, minor, adverse effects on wildlife due to disturbances (e.g., noise and motion) from demolition and renovation activities and heavy equipment use. High noise events could cause wildlife to engage in escape or avoidance behaviors, resulting in short-term, minor, adverse effects. The areas of disturbance would be relatively small in size and generally within developed areas where disturbances are common (e.g., mowing and landscaping, foot and vehicle traffic, aircraft activity). Most wildlife species in the proposed project vicinity would be expected to quickly recover once the construction, demolition, or renovation activity noise and disturbances have ceased for the day, or habituate to the noises altogether; therefore, no long-term, adverse effects on wildlife would be expected as a result of temporary demolition disturbances.

Important habitat features within the vicinity of the MFH privatization area include the wooded shelterbelt to the west of the site of the Proposed Action and the purple martin birdhouses in the MFH neighborhoods. However, although these features might provide higher quality habitat to many species, wildlife species using these areas are anticipated to be habituated to high or frequent noise events due to residential activities within the neighborhoods, vehicle and foot traffic, and the proximity of the MFH area to the runway; therefore, adverse effects would still likely be minor.

Protected and Sensitive Species. No federally listed threatened or endangered species are known to occur on Grand Forks AFB; therefore, no impacts on federally listed species would be expected from the Proposed Action. Habitats on the installation do support use by state-listed species (as defined by the North Dakota Natural Heritage Program) and species of conservation priority. Most of these are migratory bird species that use a variety of habitats on Grand Forks AFB, such as grasslands, wetlands, and wooded areas. There is no critical or significant habitat present on Grand Forks AFB. Short-term, negligible to minor, adverse effects on state-protected and state-sensitive species would be expected from the Proposed Action as a result of noise and visual disturbances from demolition activities.

Two state-listed species, the Philadelphia vireo (threatened) and merlin (endangered), have potential to occur within or adjacent to the MFH privatization area and could be adversely affected by the Proposed Action. The Philadelphia vireo was previously observed within a shelterbelt on the installation. Shelterbelts occur along the western edge of the MFH privatization area. The Philadelphia vireo could potentially use these shelterbelts as nesting habitat. A merlin has been previously observed within the MFH neighborhoods and nesting occurs on-installation. Merlins breed in open country from open woodland to prairie, occasionally in adjacent suburbs; therefore, a pair could potentially nest within the MFH privatization area. Short-term, negligible to minor, adverse effects on these species, if they occur within or near the project area, would be expected from temporary noise and motion disturbances during construction, demolition, and renovation activities. BMPs for migratory birds, which are outlined in the following paragraphs, are recommended for reduction or avoidance of impacts on nesting birds in the area.

The Migratory Bird Treaty Act, as amended, and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds,* require Federal agencies to minimize or avoid impacts on migratory birds listed in 50 CFR 10.13. If design and implementation of a Federal action cannot avoid measurable negative impacts on migratory birds, EO 13186 directs the responsible agency to develop and implement, within

2 years, a Memorandum of Understanding with the USFWS that shall promote the conservation of migratory bird populations. Demolition associated with the Proposed Action would be conducted in a manner to avoid adverse impacts on migratory birds to the extent practicable and it is not anticipated that the Proposed Action would have any measureable negative impacts on migratory birds (e.g., direct mortality, decrease in population size, decrease in fitness, repetitive nest failure). However, short-term, negligible to minor, adverse effects on migratory birds could be expected from visual and noise disturbances during demolition and renovation activities. These impacts would most likely be in the form of escape or avoidance behaviors, and are anticipated to be temporary. Known nesting locations of migratory bird species include the bluebird boxes in PVNP, north of the MFH privatization area, and the purple martin boxes within the MFH privatization area. American robins have also been observed on nests within the MFH neighborhoods (USAF 2008b).

The following BMPs are recommended for reduction or avoidance of impacts on migratory birds that could occur within the project area:

- Any ground-breaking construction activities should be performed before migratory birds return to Grand Forks AFB or after all young have fledged to avoid incidental take.
- If demolition is scheduled to start during the period in which migratory bird species are present, steps should be taken to prevent migratory birds from establishing nests in the potential impact area. These steps could include covering equipment and structures and use of various excluders (e.g., noise). Birds can be harassed to prevent them from nesting within the project area. Once a nest is established, they should not be harassed until all young have fledged and have left the nest site.
- If construction is scheduled to start during the period when migratory birds are present, a site-specific survey for nesting migratory birds should be performed starting at least 2 weeks prior to site clearing.
- If nesting birds are found during the survey, buffer areas should be established around nests. Construction should be deferred in buffer areas until birds have left the nest. Confirmation that all young have fledged should be made by a qualified biologist.

The Bald and Golden Eagle Protection Act could apply to the implementation of the Proposed Action if it is determined that a bald eagle nest could be affected. The bald eagle has been witnessed hunting in the sewage lagoons of Grand Forks AFB east of the main installation (GFAFB 2008c). No eagle nests have been observed on Grand Forks AFB; however, a bald eagle nest has been observed approximately 2 miles east of the installation on the west side of Kellys Slough NWR. No critical habitat for this species has been designated in Grand Forks County. If a bald eagle nest is discovered near the project area, the USFWS and North Dakota Game and Fish Department would be consulted to ensure compliance with the Bald and Golden Eagle Protection Act and state regulations; therefore, the implementation of the Proposed Action is not expected to have adverse effects on bald eagles.

3.6.3.3 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no changes to current biological resources as described in **Section 3.6**. Therefore, no impacts on biological resources would be expected from the selection of the No Action Alternative.

3.7 Cultural Resources

3.7.1 Definition of the Resource

Cultural resources is an umbrella term for many heritage-related resources, including prehistoric and historic sites, buildings, structures, districts, or any other physical evidence of human activity considered important to a culture, a subculture, or a community for scientific, traditional, religious, or any other reason. Depending on the condition and historic use, such resources might provide insight into the cultural practices of previous civilizations or they might retain cultural and religious significance to modern groups.

Several Federal laws and regulations govern protection of cultural resources, including the National Historic Preservation Act of 1966 (NHPA), the Archaeological and Historic Preservation Act (1974), the American Indian Religious Freedom Act (1978), the Archaeological Resources Protection Act (1979), and the Native American Graves Protection and Repatriation Act (NAGPRA).

Typically, cultural resources are subdivided into archaeological resources (prehistoric or historic sites, where human activity has left physical evidence of that activity but no structures remain standing); architectural resources (buildings or other structures or groups of structures, or designed landscapes that are of historic or aesthetic significance); or resources of traditional, religious, or cultural significance to Native American tribes.

Archaeological resources comprise areas where human activity has measurably altered the earth, or deposits of physical remains are found (e.g., projectile points and bottles).

Architectural resources include standing buildings, bridges, dams, and other structures of historic or aesthetic significance. Generally, architectural resources must be more than 50 years old to be considered eligible for the National Register of Historic Places (NRHP). More recent structures, such as Cold War-era resources, might warrant protection if they are of exceptional importance or if they have the potential to gain significance in the future.

Resources of traditional, religious, or cultural significance to Native American tribes can include archaeological resources, structures, neighborhoods, prominent topographic features, habitat, plants, animals, and minerals that Native Americans or other groups consider essential for the preservation of traditional culture.

The EA process and the consultation process prescribed in Section 106 of the NHPA require an assessment of the potential impact of an undertaking on historic properties that are within the proposed project's Area of Potential Effect (APE), which is defined as the geographic area(s) "within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist." Under Section 110 of the NHPA, Federal agencies are required to inventory resources under their purview to the NRHP. In accordance with the NHPA, determinations regarding the potential effects of an undertaking on historic properties are presented to the State Historic Preservation Office (SHPO). Federally recognized Native American tribes would be consulted with in accordance with EO 13175, *Consultation and Coordination with Indian Tribal Governments* (9 November 2000).

3.7.2 Existing Conditions

Although Grand Forks AFB began in 1954 with the escalation of the Cold War between the United States and the Soviet Union, it is an installation rich in history. Several archaeological investigations have been conducted at Grand Forks AFB. Surveyed areas generally include the area around the north end of the runway to the installation boundaries, the area between the west boundary and the runway, the area from the southwest corner of the runway to the west and south installation boundaries, and the area along the

south boundary and southeast corner up to developed acreage at the south edge of the installation. The remainder of acreage at the installation is previously disturbed due to construction grading for the Air Force facilities.

An installationwide survey was conducted in 1996 to locate and inventory cultural resources (USAF 2008b). The 1996 survey identified four sites of historic farmsteads (one with an isolated prehistoric flake), one isolated prehistoric find, and two isolated historic finds. All were evaluated as not eligible for the NRHP. The research design for the 1996 survey divided the installation into areas of high, medium, and low probability for archaeological resources. The parcels of the Proposed Action fall within low probability areas of previously disturbed land of the installation including past or existing housing development (USAF AMC 2008).

Grand Forks AFB was constructed just over 50 years ago, and buildings at the installation are just now reaching the age guideline for potential NRHP-eligibility. In addition, Grand Forks AFB has Cold War-era buildings that have the potential to be eligible under NRHP Criterion Consideration G if they are considered exceptionally significant within the past 50 years. In 1994, HQ AMC began a reconnaissance survey of Cold War resources nationwide including at Grand Forks AFB, and the findings were presented in *Grand Forks Air Force Base, Grand Forks, North Dakota, Inventory of Cold War Properties*. The study inventoried 242 resources associated with Grand Forks AFB across the upper midwestern United States; however, most were missile silos and associated buildings and structures located off-installation, with only 27 surveyed buildings located within the Grand Forks AFB installation boundaries (USAF AMC 2008).

There are several Cold War-era buildings eligible for the NRHP at Grand Forks AFB but all are located away from the parcels of the Proposed Action, and will not be discussed in more detail. Of the 833 MFH units that will be conveyed to the PO, 547 units on Parcel 1 were built after 1989, the terminus of the Cold War. These units would continue to be used as housing under the Proposed Action. The remaining 286 MFH units, located in the Holly neighborhood in Parcel 2, were built in 1964.

The oldest family housing on the installation is Capehart housing buildings constructed in 1959 in the Redwood neighborhood. This housing is being demolished but under previous programs and not under the Proposed Action. In addition, there also are 142 non-Capehart MFH units constructed in 1964. The remaining MFH units were constructed in 1976 or after 1998. Grand Forks AFB consulted with the North Dakota SHPO on the proposed demolition and transfer of housing through FY 2007 (USAF AMC 2008, SHSND 2006, SHSND 2007). The 2002 PC issued by the ACHP to DOD regarding the management of Capehart-Wherry housing, associated structures, and landscape features applies to housing constructed between 1946 and 1962 under these programs. It facilitates the USAF's compliance with Section 106 with respect to management of Capehart- and Wherry-era housing. None of the Capehart housing at Grand Forks AFB was considered of particular importance in conveying the significance of housing in this era pursuant to the PC. The North Dakota SHPO concurred with the finding of "No Historic Properties Affected" for the undertakings in letters dated September 20, 2006 (SHSND 2006) and May 10, 2007 (SHSND 2007) that are in the *Grand Forks Air Force Base Integrated Cultural Resources Management Plan* (USAF AMC 2008). Based on these consultations, none of the remaining housing including the units constructed in 1964 on Parcel 2 would appear to meet the 50-year guideline for NRHP eligibility or the exceptional significance threshold called for under NRHP Criterion Consideration G. Units constructed after 1989 would be too recent to need to be considered for NRHP eligibility evaluation under Section 106. Grand Forks AFB and North Dakota SHPO consultations will be completed pursuant to Section 106 consultation obligations prior to commencing construction, demolition, or renovation activities associated with the Proposed Action.

Grand Forks AFB has no known properties of traditional cultural significance or sacred sites based on tribal coordination accomplished to date. The USAF has consulted with 23 federally recognized Native

American tribes with interest in the area where Grand Forks AFB is located. A list of all the Native American tribes consulted with regarding the Proposed Action can be found in **Appendix C**.

3.7.3 Environmental Consequences

3.7.3.1 Evaluation Criteria

Under Section 106 of the NHPA, adverse effects on historic properties can include any of the following:

- Physically altering, damaging, or destroying all or part of a resource
- Altering characteristics of the surrounding environment that contribute to the resource's significance
- Introducing visual or audible elements that are out of character with the property or that alter its setting
- Neglecting the resource to the extent that it deteriorates or is destroyed
- The sale, transfer, or lease of the property out of agency ownership (or control) without adequate legally enforceable restrictions or conditions to ensure preservation of the property's historic significance.

For the analysis of effects of the Proposed Action on archaeological resources, the APE includes both direct impacts from ground-disturbing activity, and indirect impacts resulting from undertakings outside of site locations. Impacts on cultural resources includes potential effects on buildings, sites, structures, districts, and objects eligible for or included in the NRHP; cultural items as defined in the NAGPRA; archaeological resources as defined by the Archaeological Resources Protection Act of 1979; and archaeological artifact collections and associated records as defined by 36 CFR Part 79.

Under Section 106 of the NHPA, the Proposed Action might have no effect, no adverse effect, or an adverse effect on historic properties.

3.7.3.2 Proposed Action

Archaeological Resources. No impacts on known archaeological resources would be expected under the Proposed Action. The Proposed Action would occur either in areas that have been previously surveyed or areas of previous disturbance including housing with low probabilities for archaeological resources.

In the event of an inadvertent discovery on Grand Forks AFB, all work in the immediate vicinity of the discovery would be halted until the materials are identified and documented and an appropriate mitigation strategy is developed in consultation with the North Dakota SHPO and other consulting parties. In compliance with NAGPRA, tribal representatives would be notified and consulted about the proposed treatment of human remains and funerary and sacred objects should these be discovered during implementation of the Proposed Action. Accordingly, the Proposed Action would have no effect on known archaeological resources.

Architectural Resources. The Proposed Action would not be expected to impact NRHP-eligible architectural resources. The MFH units are not eligible for the NRHP under Criteria A through D or Criterion Consideration G or located near a NRHP-eligible building.

Resources of Traditional, Religious, or Cultural Significance to Native American Tribes. There are no known resources of significance to Native American tribes at Grand Forks AFB (USAF 2008b). If

resources of traditional, religious, or cultural significance to Native American tribes are identified within the APE of the Proposed Action, Grand Forks AFB would consult with the tribes to avoid, minimize, or mitigate any impacts from the Proposed Action on those resources.

3.7.3.3 No Action Alternative

Under the No Action alternative, all existing housing considered under this EA would be maintained and none would be demolished. The community center, additional utilities, community center/clubhouse with indoor playground and splash park, storage facility, and dog park would not be constructed. As a result, under the No Action Alternative, there would be no impacts on known archaeological resources; architectural resources; or resources of traditional, religious, or cultural significance to Native American tribes.

3.8 Socioeconomics and Environmental Justice

3.8.1 Definition of the Resource

Socioeconomics. Socioeconomics is defined as the basic attributes and resources associated with the human environment, particularly population and economic activity. Population levels are subject to fluctuations from regional birth and death rates and immigration and emigration of people. Economic activity typically encompasses employment, personal income, and industrial or commercial growth. Changes in these two fundamental socioeconomic indicators are typically accompanied by changes in other components, such as housing availability and the provision of public services.

Socioeconomic data at county, state, and national levels permit a characterization of baseline conditions in the context of regional, state, and national trends. For the purpose of the Proposed Action, this section focuses primarily on the construction industry and the real estate market. Socioeconomic data analyzed in this section represents the region of influence (ROI) relative to its surrounding metropolitan city, county, and state levels to characterize baseline socioeconomic conditions relative to regional and state trends.

Demographics identify the population levels and changes to population levels of a region. Demographics data might also be obtained to identify, as appropriate to evaluation of a proposed action, a region's characteristics in terms of race, ethnicity, poverty status, educational attainment level, and other broad indicators.

The demographics of a geographic region can describe the socioeconomic environment, which represents a composite of several interrelated and nonrelated factors. There are several factors that can be used as indicators of socioeconomic conditions for a geographic area, such as average educational attainment, personal income, percentage of residents living below the poverty level, employment/unemployment rates, employment by business sector, and cost of housing. These characteristics cumulatively measure the community quality of life. Data on employment can identify gross numbers of employees, employment by industry or trade, and unemployment trends. Data on personal income in a region can be used to compare the before and after effects of any jobs created or lost as a result of a proposed action. Data on industrial, commercial, and other sectors of the economy provide baseline information about the economic health of a region.

Environmental Justice. Environmental justice is defined by EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, issued on 11 February 1994, by President Clinton. EO 12898 pertains to environmental justice issues and relates to various socioeconomic groups and the health effects that could be imposed on them. This EO requires that Federal agencies' actions substantially affecting human health or the environment do not exclude persons,

deny persons benefits, or subject persons to discrimination because of their race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no groups of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of Federal, state, tribal, and local programs and policies. Consideration of environmental justice concerns includes race, ethnicity, and the poverty status of populations in the vicinity of a proposed action. Such information aids in evaluating whether a proposed action would render vulnerable any of the groups targeted for protection in the EO.

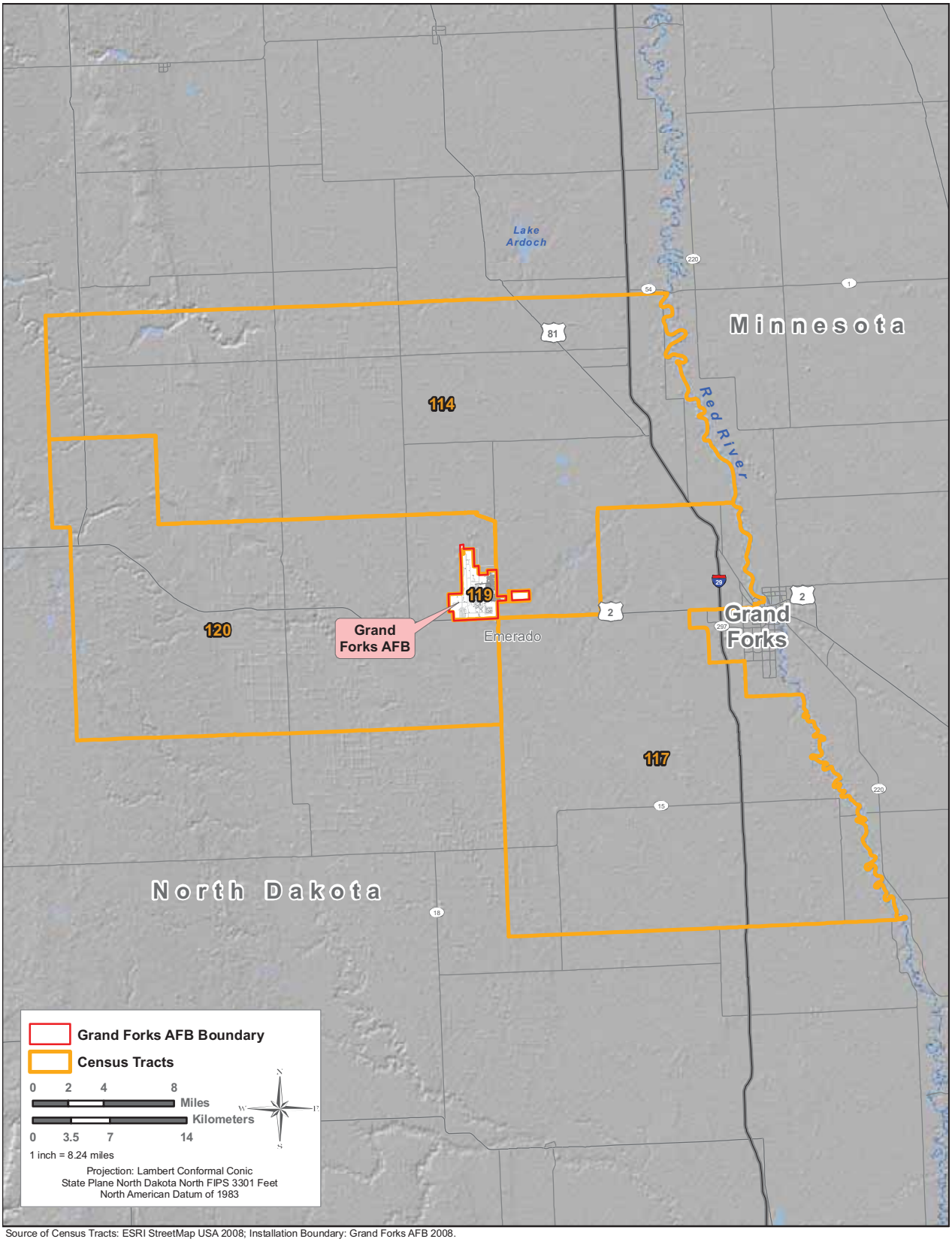
3.8.2 Existing Conditions

Grand Forks AFB lies within Grand Forks County on the eastern edge of the North Dakota-Minnesota border. Grand Forks County is approximately 1,440 square miles (USCB 2000a). For the Proposed Action, the socioeconomic baseline conditions are presented using four spatial levels: (1) the ROI, defined as the census tracts surrounding Grand Forks AFB, which are tracts 114, 117, and 120; (2) Grand Forks County; (3) Grand Forks Metropolitan Statistical Area (GFMSA); and (4) the State of North Dakota. The ROI is defined as the economic characteristics of a proposed action that could occur within the immediate area around Grand Forks AFB. Grand Forks County is included in the analysis, as Grand Forks AFB is located within the county. GFMSA is the nearest metropolitan area to Grand Forks AFB. GFMSA includes Grand Forks County in North Dakota and Polk County in Minnesota. The State of North Dakota is included to provide another level of comparison. Subsequently, the population within the ROI and other major residential and commercial areas around the Proposed Action are captured. **Figure 3-5** shows the census tracts around the ROI.

The ROI population was 10,695 in 2000, a 12.6 percent increase from 9,343 in 1990. The population of Grand Forks County in 2000 was 66,109, a 6.5 percent decrease from the 1990 population of 70,683. This is compared to the State of North Dakota, which remained relatively constant at 638,800 and 642,200 over the same period (USCB 1990, USCB 2000b).

Socioeconomics. **Table 3-8** lists the industry of employment for the ROI, Grand Forks County, GFMSA, and the State of North Dakota. The two industries that employ the largest percentage of residents in the ROI, Grand Forks County, GFMSA, and the State of North Dakota are (1) educational, health, and social services; and (2) retail trade. The third largest industry for the ROI is construction; for Grand Forks County, the third largest industry is arts, entertainment, recreation, accommodation, and food services; and for the State of North Dakota, the third largest industry by employment is tied between arts, entertainment, recreation, accommodation, and food services and agriculture, forestry, fishing and hunting, and mining. The ROI has 2 percent of the workforce in the Armed Forces, Grand Forks County has 4.3 percent, GFMSA has 3 percent, and the State of North Dakota has 1 percent. Grand Forks AFB employed 8,115 people in 2000, contributing to 15 percent of Grand Forks County employment. Grand Forks AFB contributed $130 million in payroll expenditures boosting the total economic impact to $269 million. There are approximately 4,900 federally employed civilians and contractors on Grand Forks AFB (GFAFB 2008d, Vanderhoff 2010).

Unemployment in North Dakota is relatively low when compared to other states in the country. The unemployment rate for North Dakota rose 1.2 percent over the past 10-year period from 3.0 percent in January 2000 to 4.2 percent in January 2010. Compared to the January 2010 unemployment level of 9.7 percent for the United States, North Dakota unemployment rates have remained relatively constant even throughout the economic downturn within recent years (BLS 2010a, BLS 2010b). The median household income for the ROI is $41,763, which is 15 percent higher than Grand Forks County, 12 percent higher than the GFMSA, and 20 percent more than the average state income (see **Table 3-9**).



Source of Census Tracts: ESRI StreetMap USA 2008; Installation Boundary: Grand Forks AFB 2008.

Figure 3-5. Census Tracts Surrounding Grand Forks AFB

Table 3-8. Employment by Industry in 2000

Employment Types	ROI	Grand Forks County	GFMSA	North Dakota
Population 16 Years and Over in the Labor Force	8,115	52,229	76,520	502,306
Percentage of Employed Persons in Armed Forces	2.0%	4.3%	3.0%	1.4%
Agriculture, forestry, fishing and hunting, and mining	8.7%	2.4%	4.0%	8.2%
Construction	9.8%	7.3%	7.2%	6.2%
Manufacturing	7.4%	6.2%	7.2%	7.1%
Wholesale trade	3.7%	3.0%	2.9%	3.7%
Retail trade	10.5%	13.6%	13.1%	12.7%
Transportation and warehousing, and utilities	6.8%	5.0%	5.1%	5.7%
Information	1.4%	1.9%	1.9%	2.3%
Finance, insurance, real estate, and rental and leasing	3.8%	4.6%	4.3%	5.9%
Professional, scientific, management, administrative, and waste management services	6.0%	6.1%	5.5%	6.0%
Educational, health, and social services	25.7%	29.8%	29.4%	24.2%
Arts, entertainment, recreation, accommodation, and food services	7.0%	10.9%	9.6%	8.2%
Other services (except public administration)	5.0%	4.7%	5.2%	4.9%
Public administration	4.3%	4.5%	4.4%	4.8%

Source: USCB 2000b

More significantly, the poverty status in the ROI for individuals and families was less than that of Grand Forks County, GFMSA, and the State of North Dakota (USCB 2000b). Grand Forks AFB provides housing for approximately 1,693 active-duty military members, with 999 military members living on-installation and 694 living off-installation. In addition, there are approximately 2,254 family members accompanying the active-duty military members. Of the 2,254 family members, 1,172 live on-installation and 1,082 live off-installation (GFAFB 2008d, Vanderhoff 2010).

Environmental Justice. Minority population levels throughout the ROI tend to be slightly less than minority levels in Grand Forks County, GFMSA, and the State of North Dakota (see **Table 3-9**). The two largest minority populations in the ROI are (1) Hispanic or Latino; and (2) American Indian, Alaska Native. The American Indian population in the ROI (1.3 percent) is less than that of Grand Forks County (2.3 percent), GFMSA (2.0 percent), and the State of North Dakota (4.9 percent), while the Hispanic population in the ROI was slightly greater than the State of North Dakota at 1.4 percent compared to 1.2 percent in Grand Forks County and 2.9 percent for GFMSA. The poverty status in the ROI of both individuals and families was less than that of Grand Forks County, GFMSA, and the State of North Dakota.

Table 3-9. Minority, Low-income, and Poverty Status for 2000

Demographic	ROI	Grand Forks County	GFMSA	North Dakota
Total Population	10,695	66,109	97,478	642,200
Percent Male	52.2	50.9	50.5	49.9
Percent Female	47.8	40.1	49.5	50.1
Percent Under 5 Years	5.8	6.4	6.3	6.1
Percent Over 65 Years	11.2	9.6	12.2	14.7
Percent White	96.0	93.0	93.4	92.4
Percent Black or African American	0.7	1.4	1.0	0.6
Percent American Indian, Alaska Native	1.3	2.3	2.0	4.9
Percent Asian	0.5	1.0	0.8	0.6
Percent Native Hawaiian and Other Pacific Islander	0.0	0.1	0.1	0.0
Percent Some Other Race	0.5	0.7	1.3	0.4
Percent Reporting 2 or more races	1.0	1.6	1.5	1.2
Percent Hispanic or Latino [a]	1.4	2.1	2.9	1.2
Percent of Individuals Below Poverty [b]	6.9	12.3	11.9	11.9
Percent of Families Below Poverty	5.0	8.0	7.8	8.3
Per Capita Income [c]	$17,990	$17,868	$17,679	$17,769
Median Household Income [c]	$41,763	$35,785	$35,562	$34,604

Source: USCB 2000b

Notes:

a. Persons of Hispanic or Latino origin can be of any race, and thus are also included in applicable race categories.

b. Based on 1999 poverty thresholds.

c. Per Capita Income and Median Household Income for the ROI consist of the average of all census tracts included in the ROI.

Grand Forks AFB is involved with OWS, a collaborative program providing more than 1,000 excess MFH units to several American Indian reservations in Montana, North Dakota, South Dakota, and Minnesota. Grand Forks AFB has transferred 270 housing units to the OWS program from 1998 to 2009. Most recently was the removal and transfer of 34 housing units from the Meadowlark Manor neighborhood in 2009.

3.8.3 Environmental Consequences

3.8.3.1 Evaluation Criteria

The significance of construction expenditures is assessed in terms of direct effects on the local economy and related effects on other socioeconomic resources (e.g., income, housing, employment). The magnitude of potential impacts can vary greatly, depending on the location of a proposed action. For example, implementation of an action that creates ten employment positions might be unnoticed in an urban area, but could have significant impacts in a rural community. If potential socioeconomic changes

were to result in substantial shifts in population trends or in adverse effects on regional spending and earning patterns, they would be considered significant.

This section identifies potential economic and social impacts that might result from the Proposed Action. The methodology for social impacts is based on the Guidelines and Principles for Social Impact Assessment, developed by an interorganizational committee of experts in their field (NOAA 1994). Finally, this section also evaluates environmental justice concerns to include disproportionate impacts on low-income or minority populations.

3.8.3.2 Proposed Action

Short-term, minor, beneficial impacts on socioeconomic resources would be expected from the construction, renovation, and demolition of MFH units at Grand Forks AFB; no impacts on environmental justice would likely occur.

Socioeconomics. No significant impacts would be expected on employment levels, household income, or poverty level. There would be a minor, short-term increase in employment related to MFH construction, demolition, and renovation activities on the installation. Local labor and supplies would be needed to complete demolition of MFH units and construction of the community desired features, generating revenue for the local economy. The Proposed Action would not have an impact on household income and poverty levels, which directly relates to real estate development. In addition, the proposed renovation, demolition, and construction activities would provide short-term, beneficial impacts by employing workers in the construction industry. Census data for 2000 showed that there are 730 and 3,812 employees working in the construction industry within the ROI and Grand Forks County, respectively (USCB 2000b). The number of construction workers required for the proposed construction projects is relatively small compared to the available work force in the ROI and the county, and should be adequate without impacting local employment.

Long-term, minor beneficial impacts would be expected under the Proposed Action. Renovation and timely maintenance of the existing MFH units would increase their value.

Environmental Justice. No impacts would be expected to occur. The Proposed Action would not have an influence on minority or low-income populations, because demolition, construction, and renovations would occur only on Grand Forks AFB. Off-installation minority and low-income populations, limited in size and proximity to the installation, would not be adversely or disproportionately affected by the Proposed Action.

3.8.3.3 No Action Alternative

The No Action Alternative would result in continuation of the existing socioeconomic conditions and their impacts. No additional effects would be expected as a result of the Proposed Action not being implemented.

3.9 Infrastructure

3.9.1 Definition of the Resource

Infrastructure consists of the systems and physical structures that enable a population in a specified area to function. Infrastructure is wholly human-made, with a high correlation between the type and extent of infrastructure and the degree to which an area is characterized as “urban” or developed. The availability of infrastructure and its capacity to support growth are generally regarded as essential to the economic

growth of an area. The infrastructure components to be discussed in this section include transportation, utilities, and solid waste management.

Transportation includes major and minor roadways that feed into the installation; and the security gates, roadways, and parking areas on the installation. Public transit, rail, and pedestrian networks are also elements of transportation. Utilities include electrical supply, central heating and cooling, natural gas supply, water supply, sanitary sewer and wastewater systems, storm water drainage, and communications systems. Solid waste management primarily relates to the availability of landfills to support a population's residential, commercial, and industrial needs.

3.9.2 Existing Conditions

Transportation. US 2 is the primary access route to the installation from Interstate (I) 29. B-3 and Eielson Street provide access to the installation from US 2. I-29 is less than 10 miles east of the installation and is the major north-south highway corridor along the North Dakota-Minnesota border.

There are two entrances to Grand Forks AFB. The primary entrance is the main gate, which provides access to Steen Boulevard from B-3. The south gate, a secondary entrance used for commercial traffic, connects Eielson Street with US 2 (USAF 2006).

The primary vehicular routes on the installation include Steen Boulevard, Eielson Street, and J Street. Steen Boulevard serves as the center of the installation's roadway system, beginning at the main installation gate and running west to the airfield. Eielson Street provides north-south access to the installation from the south gate. J Street is the primary traffic corridor for the eastern side of the installation and serves most of the site of the Proposed Action (USAF 2006).

In general, Grand Forks AFB has good traffic flow, even during periods of peak traffic volume. The average traffic volumes during peak hours at the intersection of J Street and Steen Boulevard are as follows: 802 vehicles (7:00 a.m. to 8:00 a.m.), 482 vehicles (12:00 p.m. to 1:00 p.m.), and 993 vehicles (4:00 p.m. to 5:00 p.m.). This volume of traffic is within the average capacity for a typical urban arterial road. Recent traffic engineering studies have evaluated the traffic patterns at Grand Forks AFB and aim to improve traffic flow through roadway upgrades. Off-installation roadways are also capable of accommodating peak traffic volume (USAF 2006, USAF and Gannett Fleming 2004).

Grand Forks AFB has a 6-mile, multi-use trail system on the installation that connects the MFH privatization area to the rest of the installation. The trail facilitates the separation of pedestrians and vehicular traffic (USAF 2006).

Electrical Supply. Electrical power is supplied to Grand Forks AFB by Nodak Electric Cooperative and arrives via two 69-kilovolt feeders. The primary distribution system is 7,200/12,470 volts leaving the two main substations: (1) Steen substation and (2) Eielson substation. Nine feeder circuits in a loop radial arrangement distribute power at Grand Forks AFB. Approximately 99 percent of the transformers at Grand Forks AFB are loaded with less than 60 percent of their kilovolt-ampere rating, leaving ample electrical power available for future installation expansion (USAF 2006).

More than 72 percent of the installation's electrical system consists of underground lines, which provide the highest system reliability. Emergency electrical power is supplied to critical facilities on the installation by emergency backup generators (USAF 2006). All electrical and street lighting cables in MFH areas are buried and meet USAF standards except in the Holly neighborhood. Within Holly, electrical distribution lines are overhead, in poor condition, and nearing the end of their lifespan (USAF 2010).

Central Heating and Cooling. Grand Forks AFB does not currently maintain a central heating or cooling system. The central heating plant was decommissioned in 2001 and replaced with individual onsite heating systems (USAF 2006).

Natural Gas Supply. Natural gas is supplied to Grand Forks AFB by Xcel Energy (USAF 2010). The installation is serviced by a 12-inch main that delivers natural gas to the central metering station, and an 8-inch main that distributes natural gas to installation facilities from the metering station. Natural gas is used to heat many buildings on the installation including all the MFH units (USAF 2006). Natural gas supply lines are considered to be in fair condition in the Holly neighborhood and good condition in the remaining MFH neighborhoods (USAF 2010). Ample natural gas capacity is available for future installation expansion (USAF 2006).

Water Supply. Grand Forks AFB receives potable water from the City of Grand Forks, which, in turn, draws from the Red River. Secondary sources from Agassiz Water Users, Inc., are also available should they be needed during emergencies. There are three water mains that bring water to the installation: (1) a 14-inch water main from the City of Grand Forks, (2) an 8-inch main from Agassiz Water, and (3) an 8-inch main from the Grand Forks Traill Water District. Only the 14-inch main from the City of Grand Forks is regularly used; both 8-inch mains are kept at standby should an emergency situation arise. The primary water main has a maximum pumping capacity of 1.87 million gallons per day. Four elevated storage tanks provide a storage capacity of 1.9 million gallons of water for the installation (USAF 2006). Grand Forks AFB's current water demand averages approximately 356,000 gallons per day (Dalrymple 2010). As such, there is sufficient water supply available for future installation expansion and mission requirements.

Water supply lines in all MFH neighborhoods except Holly and Meadowlark Manor are composed of polyvinyl chloride and are considered to be in good condition. Water supply lines in the Holly and Meadowlark Manor neighborhoods are in poor and fair condition, respectively, and composed of asbestos concrete pipe. Asbestos concrete pipe is subject to breakage when disturbed and must be disposed of as a hazardous material (USAF 2010).

Sanitary Sewer and Wastewater Systems. Grand Forks AFB maintains its own sanitary sewer system and treatment center. Wastewater generated on-installation is transported via a system of gravity and force mains to a wastewater treatment center, approximately 1 mile east of the installation. The wastewater treatment center consists of four treatment lagoons (one primary, two secondary, and one tertiary), and the treatment lagoons have sufficient capacity to accommodate future installation expansion (USAF 2006). Sanitary sewer and wastewater lines in all MFH neighborhoods except Holly are in fair condition and have received periodic repairs as needed; however, root penetration and storm water infiltration are problems that might require complete replacement of approximately 10 percent of the sanitary sewer system. The sanitary sewer and wastewater lines in the Holly neighborhood are in poor condition due to their age, and experience similar problems with root penetration and storm water infiltration as the other neighborhoods (USAF 2010).

Storm Water Drainage. The storm water system at Grand Forks AFB consists of open channels, catch basins, and underground concrete pipes that move storm water through unpaved ditches. Storm water exits the installation through nine main storm water outfalls, the major ones being the northwest ditch, west ditch, south ditch, and north ditch. Storm water from the MFH privatization area discharges through the north ditch (USAF 2006, Braun 2010a).

Storm water drainage systems in all MFH neighborhoods except Holly and Meadowlark Manor are performing satisfactory with no reported unusual maintenance issues, runoff problems, or ponding during rainfall events. The storm water systems in the Holly and Meadowlark Manor neighborhoods are in fair

and good condition, respectively, but require occasional repairs to fix broken pipes from ground heaving (USAF 2010).

Section 402(p) of the CWA states that storm water discharges associated with industrial activity to waters of the United States must be authorized by an NPDES permit. Grand Forks AFB currently operates under a North Dakota Pollutant Discharge Elimination System (NDPDES) Industrial Storm Water Permit (Permit No. NDR10-0314), which expires on 31 March 2015. The permit authorizes the discharge of storm water associated with industrial activity to surface waters, in accordance with effluent limitations, monitoring requirements, and other conditions (NDDH 2005).

Communications Systems. The communications system on the installation consists of fiber optic cable between buildings and twisted pair copper cable for in-building conductivity. All Grand Forks AFB MFH units are supplied with telephone and cable television service, and eight MFH units are supplied with secured government telephone and fiber optic computer network service (USAF 2010).

Solid Waste Management. Solid waste generated at Grand Forks AFB is managed in accordance with the installation's Integrated Solid Waste Management Plan (GFAFB 2008e). There are no active landfills on Grand Forks AFB. Most solid waste generated at the installation is disposed of at the Grand Forks Municipal Landfill (Permit No. 0347), approximately 12 miles east of the installation. This landfill has permitted capacity until 2014 and is able to receive up to 350 tons of municipal waste per day (NDDH 2009c). However, many demolition and construction wastes are disposed of at the Berger Landfill, approximately 5 miles east of the installation (permitted capacity until 2016) (Berger Enterprises 2009). Both the Grand Forks and Berger landfills have sufficient available capacity for future regional waste disposal needs.

Grand Forks AFB manages a recycling program to reduce the amount of solid waste sent to landfills. The Grand Forks AFB Qualified Recycling Program is operated by contractors and accepts paper, glass, plastic, cardboard, metal cans, and compost from all installation facilities (GFAFB 2008e). Additional recycling efforts are oftentimes included in specific construction and demolition projects.

3.9.3 Environmental Consequences

3.9.3.1 Evaluation Criteria

Effects on infrastructure are evaluated for their potential to disrupt or improve existing levels of service and create additional needs for airfield and transportation resources, energy (electric, natural gas, liquid fuels, and central heating and cooling), water, sanitary sewer and wastewater service, storm water drainage, communications, and solid waste management. For example, effects might arise from physical changes to traffic circulation or energy needs created by either direct or indirect workforce and population changes related to installation activities. An effect could be significant if the Proposed Action resulted in any of the following:

- Exceeded capacity of a utility
- A long-term interruption of the utility
- A violation of a permit condition
- A violation of an approved plan for that utility.

3.9.3.2 Proposed Action

Transportation. Short-term, negligible to minor, adverse effects on the Grand Forks AFB transportation system would be expected from the implementation of Proposed Action. The construction of a

community center, storage facility, and a dog park and the demolition of 286 surplus, inadequate MFH units would result in a slight increase in the amount of traffic at the installation from equipment being delivered, debris being removed, and contractors arriving to the work sites. However, construction and demolition traffic would compose a small percentage of the total existing traffic on the installation. Many of the heavy construction and demolition vehicles would be driven to the work sites and kept onsite for the duration of demolition activities, resulting in relatively few additional trips. The proposed construction and demolition activities would be spread over a period of 6 years at various locations in the MFH area of Grand Forks AFB. This would further reduce effects on installation traffic. Any potential increases in traffic volume associated with the proposed construction and demolition activities would be temporary.

No long-term effects on the Grand Forks AFB transportation system would be expected from the Proposed Action. Although the Proposed Action would reduce the number of MFH units at Grand Forks AFB by 286 units, most units proposed for demolition are currently vacant (surplus). As such, the removal of these structures would not reduce the number of personnel at the installation and, in turn, would not reduce the amount of traffic on installation roadways. All roadways servicing MFH units scheduled for demolition would be removed as part of demolition activities. Because these roadways would no longer be needed once the MFH units are demolished, no long-term effects would be expected.

Electrical Supply. Short-term, minor, adverse effects on electrical supply would be expected from the implementation of the Proposed Action. Temporary, minor electrical service interruptions might be experienced when electrical service is disconnected from the 286 MFH units proposed for demolition and connected to the proposed community center and other ancillary facilities. Electrical service lines to the MFH units proposed for demolition would be disconnected prior to the start of demolition activities. Any underground electric utility mains scheduled for demolition would be capped at the main and abandoned in place; however, all laterals would be removed. Any aboveground electrical mains would be removed. The demolition and construction processes could result in a slight increase in the demand for electricity; however, because demolition activities would be staggered over a 6-year period, the increase in electrical demand at any one time would be minimal.

Long-term, minor, beneficial effects on the electrical supply would be expected from the Proposed Action. Following the proposed demolition of 286 MFH units, the overall electrical demand at Grand Forks AFB would be reduced by a minor amount due to the loss of these buildings. Any increase in electrical demand from the proposed community center and other ancillary facilities would be offset from the proposed demolition of the 286 surplus, inadequate MFH units. In addition, the removal of older, outdated electrical infrastructure at the MFH units proposed for demolition would be a long-term, minor, beneficial effect on the installation. The Proposed Action would convey all electrical supply infrastructure between a predetermined POD and the MFH units to the PO. The POD for electrical systems is anticipated to be at the meter of each house (USAF 2010); therefore, the PO would be responsible for all long-term electrical system maintenance within the MFH units and the USAF would continue long-term electrical system maintenance up to the meter of each MFH unit.

Central Heating and Cooling. No short- or long-term effects on central heating and cooling would be expected from the Proposed Action. Grand Forks AFB does not maintain a central heating and cooling system.

Natural Gas Supply. Short-term, negligible to minor, adverse effects on natural gas supply would be expected from the implementation of the Proposed Action. Temporary, minor natural gas service interruptions might be experienced when natural gas service is disconnected from the 286 MFH units proposed for demolition and connected to the proposed community center and other ancillary facilities. Natural gas service lines to the MFH units proposed for demolition would be disconnected prior to the

start of demolition activities. Any natural gas mains scheduled for demolition would be capped at the main and abandoned in place; however, all laterals would be removed.

Long-term, minor, beneficial effects on natural gas supply would be expected from the Proposed Action. Following the proposed demolition of 286 surplus, inadequate MFH units, the overall natural gas demand at Grand Forks AFB would be reduced by a negligible amount due to the loss of these buildings. Any increase in natural gas demand from the proposed community center and other ancillary facilities would be offset from the proposed demolition of the 286 MFH units. The Proposed Action would convey all natural gas supply infrastructure between a predetermined POD and the MFH units to the PO. The POD for natural gas systems is anticipated to be at the meter of each unit (USAF 2010); therefore, the PO would be responsible for all long-term natural gas system maintenance within the MFH units and the USAF would continue long-term natural gas system maintenance up to the meter of each MFH unit.

Water Supply. Short-term, minor, adverse effects on water supply would be expected from the implementation of the Proposed Action. Temporary, minor water service interruptions might be experienced when water service is disconnected from the 286 MFH units proposed for demolition and connected to the proposed community center and other ancillary facilities. Water supply lines to the MFH units proposed for demolition would be disconnected prior to the start of demolition activities. Any water supply mains scheduled for demolition would be capped at the main and abandoned in place; however, all laterals would be removed. Demolition and construction activities would require minimal amounts of water, mostly for dust-suppression purposes. This water would be obtained from the Grand Forks AFB water supply system. Because demolition and construction activities would be staggered over a 6-year period, the increase in water demand at any one time would be minimal.

Long-term, minor, beneficial effects on water supply would be expected from the Proposed Action. Following the proposed demolition of 286 surplus, inadequate MFH units, the overall water demand at Grand Forks AFB would be reduced by a negligible amount due to the loss of these buildings. Any increase in water demand from the proposed community center and other ancillary facilities would be offset from the proposed demolition of the 286 MFH units. In addition, the removal of asbestos concrete water supply piping would be a long-term, minor, beneficial effect on the installation. The Proposed Action would convey all water supply infrastructure between a predetermined POD and the MFH units to the PO. The POD for water systems is anticipated to be at the shutoff valve for each MFH unit (normally at the curb/street at the front of the unit) (USAF 2010); therefore, the PO would be responsible for all long-term water system maintenance from the shutoff value to the MFH units and within the MFH units, while the USAF would continue long-term water system maintenance up to the shutoff valve.

Sanitary Sewer and Wastewater Systems. Short-term, negligible to minor, adverse effects on the sanitary sewer and wastewater systems would be expected from the implementation of the Proposed Action. Temporary, minor sanitary sewer service interruptions might be experienced when wastewater piping is disconnected from the MFH units proposed for demolition and connected to the proposed community center and other ancillary facilities. Sanitary sewer and wastewater lines to the MFH units proposed for demolition would be disconnected prior to the start of demolition activities. Any sanitary sewer mains scheduled for demolition would be capped at the main and abandoned in place; however, all laterals would be removed.

Long-term, minor, beneficial effects on sanitary sewer and wastewater systems would be expected from the Proposed Action. Following the proposed demolition of 286 surplus, inadequate MFH units, the overall volume of wastewater generated at Grand Forks AFB would be reduced by a negligible amount due to the loss of these buildings. Any increase in wastewater generation from the proposed community center and other ancillary facilities would be offset from the proposed demolition of the 286 MFH units. The Proposed Action would convey all sanitary sewer and wastewater infrastructure between a

predetermined POD and the MFH units to the PO. The POD for wastewater systems is anticipated to be at the cleanout for each unit (USAF 2010); therefore, the PO would be responsible for all long-term wastewater system maintenance from the cleanout to the MFH units and within the MFH units, while the USAF would continue long-term wastewater system maintenance up to the cleanout.

Storm Water Systems. Short-term, minor, adverse effects on storm water drainage would be expected from the implementation of the Proposed Action. The proposed demolition of the 286 surplus, inadequate MFH units and the proposed construction of a community center and other ancillary facilities would require ground disturbance as heavy equipment reworks and contours land surfaces. These activities would temporarily disrupt man-made storm water drainage systems and, consequently, increase the potential for storm water runoff to erode soil during construction and demolition activities. Construction and demolition BMPs that would minimize ground disturbance and attempt to provide adequate temporary storm water management techniques would be used to minimize adverse effects on storm water drainage during the implementation of the Proposed Action. Because demolition activities would be staggered over a 6-year period, the disruption to storm water systems would be minimized at any one time.

Long-term, minor, beneficial effects on storm water systems would be expected from the Proposed Action. Following the proposed demolition of the 286 surplus, inadequate MFH units and the removal of the associated roadways and driveways, the amount of impervious surface at Grand Forks AFB would be reduced by approximately 155,981 ft^2. Any increase in the amount of impervious surfaces from the proposed community center and other ancillary facilities would be offset from the proposed demolition of the 286 MFH units. This decrease in impervious surface would allow additional quantities of storm water to permeate into the ground and reduce the amount of storm water runoff.

Communications Systems. Short-term, negligible to minor, adverse effects on communications systems would be expected from the implementation of the Proposed Action. Temporary, minor communications service interruptions might be experienced when communications lines are disconnected from the MFH units proposed for demolition. Communications lines to the MFH units proposed for demolition would be disconnected prior to the start of demolition activities. Any underground communications lines scheduled for demolition would be capped at the main and abandoned in place; however, all laterals would be removed. Any aboveground communications mains would be removed.

Long-term, minor, beneficial effects on the communications systems would be expected from the Proposed Action. Following the proposed MFH unit demolitions, the overall demand for communications systems at Grand Forks AFB would be reduced by a minor amount due to the loss of these buildings. Any increase in communications demand from the proposed community center and other ancillary facilities would be offset from the proposed demolition of the 286 surplus, inadequate MFH units. The Proposed Action would not convey any communications infrastructure to the PO; therefore, installation personnel and local communications service providers would remain responsible for long-term communications system maintenance.

Solid Waste Management. Short-term, minor, adverse effects on solid waste management would be expected from the implementation of the Proposed Action. The 286 excess MFH units would first be offered for donation through OWS's Housing Relocation Program, which would reduce short-term, adverse effects associated with solid waste management by substantially reducing the amount of demolition debris generated. If the excess MFH units cannot be reused through OWS, the proposed demolition of the 286 MFH units would generate approximately 19,382 tons of demolition waste (USEPA 2009b). Additional quantities of solid waste would also be generated from the demolition of garages, shelters, roadways, driveways, sidewalks, curbs, and utility mains; and the construction of a community center, storage facility, and other ancillary facilities. Total solid waste anticipated to be

generated from the implementation of the Proposed Action is approximately 66,282 tons (USEPA 2009b, Murphy and Chaterjee 1976). **Table 3-10** summarizes the amounts of solid waste anticipated to be generated from the various aspects of the Proposed Action. The solid wastes generated from the implementation of the Proposed Action would consist mainly of building materials such as concrete, metals (conduit, piping, and wiring), and lumber and soil piles and yard debris, such as trees and shrubs.

Table 3-10. Quantities of Construction and Demolition Debris Generated from the Proposed Action

Project	Total Square Footage	Multiplier (pounds/ft²)	Debris Generated	
			pounds	tons
Demolition of 286 MFH Units	413,604	127	52,527,708	26,254
Demolition of Roads, Driveways, Pavements *	1,225,977	65	79,688,505	39,844
Construction of Storage Facility	50,000	4.34	217,000	109
Construction of Community Center	30,000	4.34	130,200	65
		Total	**132,563,413**	**66,282**

Source: USEPA 2009b, Murphy and Chaterjee 1976

Note: * Calculated using standard asphalt density.

Contractors would be required to recycle demolition debris to the greatest extent possible, thereby diverting it from landfills. Site-generated scrap metals, wiring, clean ductwork, and structural steel would be separated and recycled offsite. Vegetation debris would be converted to mulch or recycled to the greatest extent possible. Clean fill material, ground up asphalt, and broken-up cement would be diverted from landfills and reused whenever possible. All excess soils generated would be reused to the greatest extent possible for grading and contouring.

Long-term, negligible, beneficial effects on solid waste management would be expected from the Proposed Action. Following the proposed MFH unit demolitions, the amount of solid waste generated at Grand Forks AFB would be reduced by a negligible amount because of the loss of these buildings.

3.9.3.3 No Action Alternative

The No Action Alternative would result in continuation of the existing conditions of infrastructure resources, as discussed in **Section 3.9.2**. No additional effects on infrastructure resources would be expected as a result of the Proposed Action not being implemented.

3.10 Hazardous Materials and Waste

3.10.1 Definition of the Resource

A hazardous substance, pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. §9601(14)), is defined as: "(A) any substance designated pursuant to section 1321(b)(2)(A) of Title 33; (B) any element, compound, mixture, solution, or substance designated pursuant to section 9602 of this title; (C) any hazardous waste having the characteristics identified under or listed pursuant to section 3001 of the Resource Conservation and Recovery Act (RCRA) of 1976, as amended, (42 U.S.C. §6921); (D) any toxic pollutant listed under section 1317(a) of Title 33; (E) any HAP listed under section 112 of the CAA (42 U.S.C. §7412); and (F) any imminently hazardous

chemical substance or mixture with respect to which the Administrator of the USEPA has taken action pursuant to section 2606 of Title 15. The term does not include petroleum, including crude oil or any fraction thereof, which is not otherwise specifically listed or designated as a hazardous substance, and the term does not include natural gas, natural gas liquids, liquefied natural gas, or synthetic gas usable for fuel (or mixtures of natural gas and such synthetic gas)."

Hazardous materials are defined by 49 CFR 171.8 as "hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (49 CFR 172.101), and materials that meet the defining criteria for hazard classes and divisions" in 49 CFR Part 173. Transportation of hazardous materials is regulated by the U.S. Department of Transportation regulations within 49 CFR Parts 105–180.

RCRA defines a hazardous waste in 42 U.S.C. 6903, as "a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed."

3.10.2 Existing Conditions

Hazardous Materials. AFI 32-7086, *Hazardous Materials Management*, establishes procedures and standards governing procurement, issuance, use, or disposal of hazardous materials and tracking and record-keeping for public safety and for compliance with all laws and regulations. Under AFI 32-7086, the USAF has established roles, responsibilities, and requirements for a hazardous material management program (HMMP). The purpose of the HMMP is to control the procurement and use of hazardous material to support USAF missions, ensure the safety and health of personnel and surrounding communities, and minimize USAF dependence on hazardous materials. The HMMP includes the activities and infrastructure required for ongoing identification, management, tracking, and minimization of hazardous materials. AFI 32-7080, *Pollution Prevention Program*, incorporates the requirements of all Federal regulations, AFIs, and DOD Directives for the reduction of hazardous material uses and purchases. The primary hazardous materials addressed by AFI 32-7080 are ozone-depleting substances and the 17 chemicals listed under the USEPA Industrial Toxics Program. EO 12088, *Federal Compliance with Pollution Control Standards*, ensures that necessary actions are taken for the prevention, management, and abatement of environmental pollution from hazardous materials or hazardous waste due to Federal facility activities.

Hazardous materials and petroleum products such as fuels, flammable solvents, paints, corrosives, pesticides, and cleaners are used throughout Grand Forks AFB for various functions including aircraft maintenance, aircraft ground equipment maintenance, ground vehicle maintenance, and facilities maintenance (CBP 2008). Hazardous materials are used and managed through the hazardous materials pharmacy (HAZMART) to promote pollution prevention through monitoring of all hazardous materials (GFAFB 2003a). Under the HMMP, used hazardous materials are offered for free issue and maintained by the hazardous waste accumulation site contractor at the southern end of Base Supply (Building 408) (GFAFB 2003c). Apart from small quantities of common household cleaners, automobile products, and similar materials, there are no hazardous materials stored at the site of the Proposed Action (GFAFB 2009c).

Hazardous Wastes. AFI 32-7042, *Waste Management*, directs roles and responsibilities with waste stream management including planning, training, emergency response, and pollution prevention. The management of hazardous waste is governed by the RCRA Subtitle C (40 CFR Parts 260 through 270) regulations, which are administered by the USEPA. The 319 ABW maintains a *Hazardous Waste*

Management Plan (GFAFB 2008h), as directed by AFI 32-7042. The plan prescribes the roles and responsibilities of all members of Grand Forks AFB with respect to the waste stream inventory, waste analysis plan, hazardous waste management procedures, training, emergency response, and pollution prevention. The plan establishes procedures to comply with applicable Federal, state, and local standards for solid waste and hazardous waste management.

Grand Forks AFB is a small-quantity generator (SQG) of hazardous waste (Handler Identification ND3571924759) (CBP 2008). An SQG of hazardous waste generates less than 2,200 pounds of hazardous waste per month (NDDH 2009a). Hazardous waste generated at Grand Forks AFB includes bead blast media, fuels, spent solvents, paint, stripping chemicals, oils, batteries, shelf-life expired materials, contaminated soil, and spill residue (CBP 2008). Aircraft maintenance facilities are the largest generators of hazardous waste at the installation, accounting for approximately 90 percent of hazardous waste (GFAFB 2003a). The Hazardous Waste Stream Inventory is maintained through an Access Database and is part of the Grand Forks AFB Hazardous Waste Analysis and Sampling Plan (GFAFB 2008h).

Grand Forks AFB does not maintain a permitted hazardous waste storage facility. Wastes are stored in containers at the 180-day hazardous waste accumulation site at the southern end of Base Supply (Building 408) (GFAFB 2008d). Grand Forks AFB also maintains 13 hazardous waste satellite accumulation points (SAPs) and 7 universal waste SAPs (GFAFB 2008h). A SAP is an area at or near the point of waste generation where the user accumulates small quantities of "total regulated hazardous waste" up to 55 gallons or up to 1 quart of "acutely hazardous waste." When volume exceeds these limits, the user must place the volume in excess of the limit in another container and transfer the full container to a 90-day or 180-day accumulation site within 72 hours for a maximum of 90 or 180 days, respectively. Accumulation sites where hazardous materials are stored for 90 or 180 days are designated areas at or near the worksite where hazardous waste accumulates before being transported off-installation for ultimate disposal. A SAP can also accumulate nonhazardous waste and universal wastes. Regulatory accumulation limits are not imposed on nonhazardous wastes; however, there are accumulation time limits for universal waste. Universal waste generators are allowed to accumulate universal waste at their location for no more than 9 months from the accumulation start date. Once the 9-month time limit has been reached, the universal waste must be moved to its designated waste accumulation site. In the State of North Dakota, universal wastes include the following (NDDH 2009a):

- Batteries, including nickel-cadmium, lithium- or mercury-containing batteries, and lead-acid batteries
- Pesticides, including those that have been recalled or banned from use, obsolete pesticides, damaged pesticides, and those that are no longer needed
- Mercury-containing devices, including thermostats, switches, and other items where mercury is contained in a capsule or other container and the mercury is used to transmit pressure, temperature, or electricity
- Lamps, including fluorescent tubes, high-intensity discharge lamps, neon mercury vapor, high-pressure sodium, and metal halide lamps.

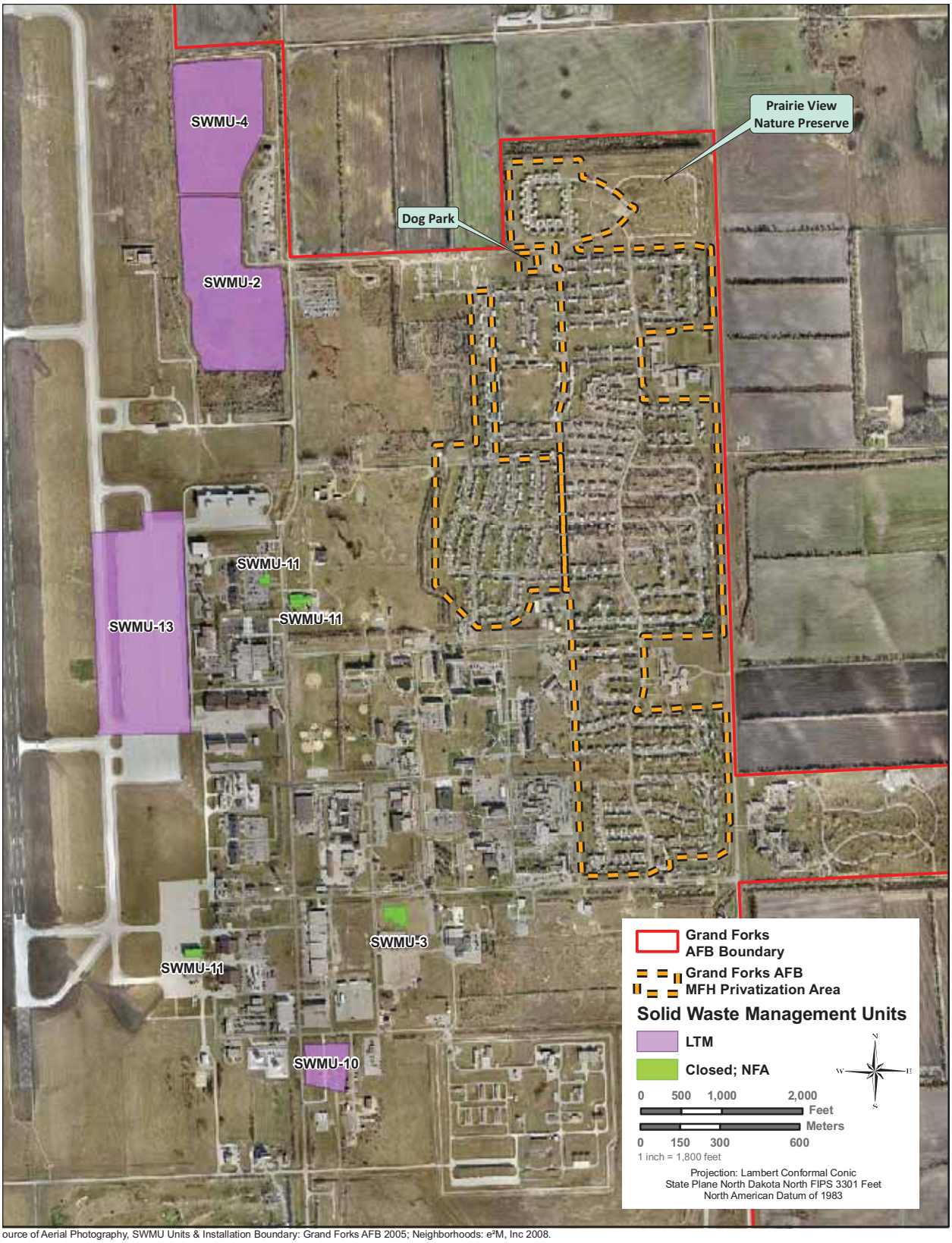
There are no hazardous waste storage areas within the site of the Proposed Action.

Environmental Restoration Program. The DOD's Environmental Restoration Program (ERP) requires each installation to identify, investigate, and clean up hazardous waste disposal or release sites. The objectives of the ERP are to identify and fully evaluate any areas suspected to be contaminated with hazardous materials caused by past USAF operations and to eliminate or control any hazards to the public

health, welfare, or the environment. The Military Munitions Response Program (MMRP) addresses nonoperational military ranges and other sites that are suspected or known to contain unexploded ordnance, discarded military munitions, or munitions constituents. The ERP and MMRP are subcomponents of the Defense Environmental Restoration Program that became law under the Superfund Amendments and Reauthorization Act.

The ERP began at Grand Forks AFB in May 1984 with an installationwide records search that identified three ERP sites for further investigation. Supplemental site assessments and investigations in the late 1980s and early 1990s brought the total number of ERP sites to seven. The seven ERP sites are FT-02, LF-03, ST-04, OT-05, ST-06, ST-07, and ST-08. Grand Forks AFB also has three Areas of Concern (AOCs) (AOC-1, AOC-501, and AOC-539) (USAF 2008c). Of the seven ERP sites, three (ST-04, OT-05, and ST-06) have a No Further Action (NFA) status and four (FT-02, LF-03, ST-07, and ST-08) are under the Long-term Monitoring (LTM) program. Of the three AOCs, one (AOC-1) has an NFA status and two (AOC-501 and AOC-539) are under the LTM program. A total of 48 suspected AOCs were added to the ERP by the NDDH in September 1993. These additional AOCs were grouped with the ERP sites into 20 solid waste management units (SWMUs). The 20 SWMUs at Grand Forks AFB are the Explosive Ordnance Detonation Area (SWMU-1); Fire Training Area (FTA)/Old Sanitary Landfill Area (OSLA) (SWMU-2); Building 306 (SWMU-3); New Sanitary Landfill Area (SWMU-4); Storm Water Sewer System (SWMU-5); Wastewater Treatment Lagoons (SWMU-6); Oil/Water Separators (SWMU-7); Waste Satellite Accumulation Areas (SWMU-8), which includes Buildings 517, 519, 520, 649, and 661; Building 622 (SWMU-9); Petroleum, Oils, and Lubricants (POL) Unloading Area (SWMU-10); POL Tank Containment Systems (SWMU-11); Abandoned Fuel Lines (SWMU-12); Refueling Ramps and Pads (SWMU-13 and -14); Waste Oil Accumulation Tank (SWMU-15); Bowsers (SWMU-16); Pole Yard Storage Area (SWMU-17); Scrap Storage Area (SWMU-18); Underground Waste Storage Tanks (SWMU-19); and Former Helicopter Wash Area (SWMU-20) (GFAFB undated a). The SWMUs are subject to RCRA Corrective Action and are regulated by Grand Forks AFB RCRA Corrective Action permits. Primary contaminants in soils and sediments include elevated levels of VOCs, semivolatile organic compounds, polycyclic aromatic hydrocarbons, and total petroleum hydrocarbons. Primary contaminants in groundwater include fuels and solvents (USAF 2008c). SWMU-11 and SWMU-2 are within 0.5 miles of the site of the Proposed Action (see **Figure 3-6**). There are no MMRP sites at Grand Forks AFB.

The POL containment systems (SWMU-11) include two areas west and within 0.5 miles of the proposed project area. The POL containment systems have been in use since 1957, with various upgrades since their original construction. The construction of the systems varies from concrete-lined systems to asphalt-coated earthen berms and the dimensions of the systems vary based on the size of the storage tanks (30 by 40 feet to 100 by 100 feet). The POL containment systems are designed to collect any spills from the POL storage tanks and precipitation. Storage tanks within the systems contain petroleum hydrocarbons, including gasoline, jet fuel, hydraulic oil, heating oil, and diesel fuel. The POL containment systems were added to the Grand Forks AFB Corrective Action Permit as SWMU-11 due to potential soil and groundwater contamination. There are no known releases from the POL containment systems; however, soil and groundwater sampling was conducted in 1995 to verify that POL products had not impacted the soil or groundwater. Immunoassay analyses of soil and groundwater samples collected detected no contaminants. Laboratory analyses of soils detected toluene, polycyclic aromatic hydrocarbons, and total petroleum hydrocarbons; however, the concentrations were below levels of concern. Laboratory analyses of groundwater found no contaminants. SWMU-11 currently has a NFA status (GFAFB undated a).



ource of Aerial Photography, SWMU Units & Installation Boundary: Grand Forks AFB 2005; Neighborhoods: e²M, Inc 2008.

Figure 3-6. Solid Waste Management Units in Vicinity of the MFH

The FTA/OSLA (SWMU-2) is approximately 28 acres in size and is 0.5 miles west-northwest of the proposed project area. The FTA (approximately 5 acres in size) is entirely within the boundary of the OSLA; therefore, the FTA and OSLA were combined into one site and designated as SWMU-2. Between approximately 1958 and 1980, the OSLA accepted unsegregated municipal and potentially hazardous wastes (i.e., sludges, cleaning residues, and solvents). These wastes were reportedly dumped into trenches or excavated cells. The FTA was on the northeastern end of the OSLA and contained an abandoned 10,000-gallon UST, mock aircraft, and a small concrete building. The FTA was used between 1970 and 1988 for firefighter training (USAF 2008c, GFAFB undated a). Training exercises included spraying fuels, waste oils, and waste fuels on the ground in the burn pit (approximately 275 feet in diameter) and igniting them and extinguishing the resulting fire. The FTA/OSLA was added to the Grand Forks AFB Corrective Action Permit as SWMU-2 in 1993 and is regulated by the Grand Forks Hazardous Waste Storage permit. Phase II Stage 1 and Stage 2 field investigations were conducted at SWMU-2, which included soil sampling and the installation of 35 groundwater wells. Soil and groundwater samples collected revealed contamination above action levels; therefore, an earthen and geosynthetic cap was constructed in 1997 to minimize percolation of precipitation, thus minimizing and potentially eliminating leachate generation. SWMU-2 is currently under LTM, with periodic surface water and groundwater sampling (GFAFB undated a).

Aboveground and Underground Storage Tanks. AFI 32-7044, *Storage Tank Compliance*, implements AFPD 32-70. It identifies compliance requirements for USTs, aboveground storage tanks (ASTs), and associated piping that store petroleum products and hazardous substances. USTs are subject to regulation under RCRA, 42 U.S.C. 6901, and 40 CFR 280. An inventory of ASTs and USTs is maintained at Grand Forks AFB and includes the location, contents, capacity, containment measures, status, and installation dates.

Grand Forks AFB maintains an SPCC Plan in accordance with 40 CFR 112 *Oil Pollution Prevention* and DOD Directive 5030.41, *Oil and Hazardous Substances Pollution Prevention Contingency Program*. The plan establishes procedures, methods, equipment, and other criteria to prevent the discharge of petroleum into or upon navigable waters. The majority of the petroleum handled at Grand Forks AFB is Jet-Propellant-8 (JP-8) fuel. Grand Forks AFB currently stores JP-8 fuel in ASTs (total capacity of 3.2 million gallons) at two bulk storage facilities, the Bulk Fuel Storage Area (Pumphouse 501), and the Hydrant Fuels Area (Pumphouses 651 and 658) (GFAFB 2009d, GFAFB 2003c). The Bulk Fuel Storage Area is near the southern side of the installation and is the receiving point for JP-8 fuel. There are two ASTs at the Bulk Fuel Storage Area, which are used to supply fuel to the ramp along the flight line and the Hydrant Fuels Area. JP-8 is transferred across the installation through underground pipelines. The Hydrant Fuels Area is on the western side of the installation and uses two ASTs to supply fuel to the C Ramp (GFAFB 2003c). **Table 3-11** summarizes the active ASTs within 0.5 miles of the site of the Proposed Action.

There are nine USTs near the flight line that contain JP-8 and have capacities that range from 3,000 to 40,000 gallons (total capacity 73,000 gallons). In addition, there are two 4,000-gallon underground product recovery tanks at Pump House 651 and 658, and two 2,500-gallon underground product recovery tanks at Pump House 501 and 511. Four R-11 fuel delivery trucks, each with a capacity of 6,000 gallons, are used to fuel aircraft. In addition to JP-8, USTs on the installation also contain gasoline, diesel fuel, used oil, E85 (ethanol fuel), and hydraulic oil (GFAFB 2003c).

Table 3-11. ASTs within 0.5 Miles of the Proposed Action

Tank Number	Building Number	Contents	Capacity (gallons)
102	102	Diesel	250
102-DT	102	Diesel	75
105	105	Cooking Grease	300
109	109	Diesel	2,000
109-DT 1	109	Diesel	75
109-DT 2	109	Diesel	75
118	118	Cooking Grease	300
169	169	Diesel	120
202	202	Cooking Grease	300
241	241	Diesel	152
242	242	Diesel	1,000
243	243	Used Oil	225
310-1	310	Used Oil	85
310-2	310	Used Oil	550
314	314	Diesel	20
315	315	Cooking Grease	300
607 DT	607	Diesel	100
649 DT	649	Diesel	75
801	801	Diesel	350
1446	1446	Diesel	200

Source: GFAFB undated b

The 319th Mission Support Group (319 MSG) is responsible for receiving, storing, and issuing the majority of the fuel at Grand Forks AFB. The 319 MSG provides supervision to the Bulk Fuel Storage Facility, two aircraft hydrant fueling systems (Type II and Type III), and a military vehicle fueling station. The following facilities use various storage tanks to store gasoline, diesel fuel, used motor oil, and ethanol fuel (E85): General Services, Electrical Power Production Shop, Aerospace Ground Equipment Flight Maintenance Shop, Army and Air Force Exchange Service, and Operations Flight Infrastructure Electrical (GFAFB 2003c). Gasoline is contained in two 10,000-gallon USTs near the Shopette (Building 240) and in one 20,000-gallon UST at the Government-owned vehicle filling station (Building 454). Diesel fuel is contained in four USTs with capacities that range from 550 to 15,000 gallons at Buildings 454, 528, 607, and 664. The total UST capacity for diesel fuel is 22,550 gallons.

Used oil is contained within six USTs with capacities that range from 500 to 9,000 gallons at Buildings 314, 580, 605, 649, 661, and 737. The total UST capacity for used oil is 21,500 gallons. E85 is contained in one 10,000-gallon UST at Building 454, and hydraulic oil is contained in one 1,000-gallon UST at Building 556 (Braun 2010b). There are also numerous diesel-powered generators at Grand Forks AFB that are used to supply electricity during electrical emergencies. Diesel fuel for these generators is stored in ASTs, USTs, or in tanks found within the generator units (GFAFB 2003c). **Table 3-12** summarizes the USTs within 0.5 miles of the site of the Proposed Action.

Table 3-12. USTs within 0.5 Miles of the Proposed Action

Tank Number	Building Number	Contents	Capacity (gallons)	Status
240-1-2	240	Gasoline	10,000	Active
240-2-2	240	Gasoline	10,000	Active
314-1	314	Used Oil	1,000	Active
605-2	605	Used Oil	1,500	Active
607-1-2	607	Diesel	1,000	Active
649-1	649	Diesel	1,500	Temporarily Closed
649-2	649	Used Oil	9,000	Active
737-5-2	737	Used Oil	2,500	Active

Source: Braun 2010b

From the 1950s to the early 1980s, MFH units were heated by heating oil. Each MFH unit had its own heating oil UST. The use of these USTs discontinued in the 1980s, and these USTs were removed, as natural gas has been extended throughout the installation (GFAFB 2003c, GFAFB 2009c, Braun 2010b). Multiple leaks of heating oil occurred within the proposed project area, which resulted in contaminated soil. Contaminated soil was discovered in the 1990s during demolition of some of the MFH units. Some of the contaminated soil was removed along with the USTs and taken to a land treatment facility. Residual soil contamination could be present within the locations of the former USTs (GFAFB 2009c).

Asbestos-Containing Materials. AFI 32-1052, *Facilities Asbestos Management*, provides the direction for asbestos management at USAF installations. This instruction incorporates by reference applicable requirements of 29 CFR Part 669 et seq., 29 CFR 1910.1025, 29 CFR 1926.58, 40 CFR 61.3.80, Section 112 of the CAA, and other applicable AFIs and DOD Directives. AFI 32-1052 requires installations to develop an asbestos management plan for the purpose of maintaining a permanent record of the status and condition of ACM in installation facilities, and documenting asbestos management efforts. In addition, the instruction requires installations to develop an asbestos operating plan detailing how the installation accomplishes asbestos-related projects.

Asbestos is regulated by USEPA under the CAA; Toxic Substances Control Act; CERCLA; North Dakota Administrative Code 33-15-13, *Emission Standards for Hazardous Air Pollutants*; and Century Code 23, *Health and Safety Chapter 25 Air Pollution Control*, with the authority promulgated under the OSHA. Identification of ACM in installation facilities is governed by OSHA under the authority of the *Occupational Safety and Health Act*, 29 U.S.C. §§ 669 et seq. Section 112 of the CAA regulates emissions of asbestos fibers to ambient air. Building materials in older buildings are assumed to contain asbestos. It exists in a variety of forms and can be found in floor tiles, floor tile mastic, roofing materials, joint compound used between two pieces of wallboard, some wallboard thermal system insulation, and boiler gaskets. If asbestos is disturbed, fibers can become friable. Common sense measures, such as avoiding damage to walls and pipe insulation, will help keep the fibers from becoming airborne. Friable ACM is any material containing more than 1 percent asbestos, and that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. Nonfriable ACM is any ACM that does not meet the criteria for friable ACM. North Dakota has its own program and guidelines to manage ACM. The NDDH is responsible for overseeing compliance with the requirements of the ACM program.

Grand Forks AFB maintains an *Asbestos Management Plan* and an *Asbestos Operating Plan* that document policies and procedures for managing ACM at Grand Forks AFB and specify responsibilities and requirements for identifying, assessing, and maintaining ACM. Asbestos concerns are managed by the 319th Civil Engineering Squadron/Asset Management (GFAFB 2008d). Asbestos was found in MFH units in the Holly neighborhood at Grand Forks AFB during a 1993 survey, primarily in suspect materials such as the wall and ceiling, which is composed of sheetrock, vinyl flooring, hot water tank, HVAC ducts, and insulation. Much of the ACM was likely removed through various renovation and remodeling activities (Braun 2009, GFAFB undated c, GFAFB undated d, GFAFB undated e, GFAFB undated f). The water lines along Louisiana Street in the MFH area are constructed of old asbestos-containing transite and are reportedly in poor condition (see **Section 3.9.2**) (GFAFB 2008d). The Housing Community Profile recommends replacing these transite pipes with polyvinyl chloride piping.

Lead-Based Paint. Lead is a heavy, ductile metal commonly found simply as metallic lead or in association with organic compounds, oxides, and salts. It was commonly used in house paint until the Federal government banned the use of most LBP in 1978. Therefore, it is assumed that all structures constructed prior to 1978 could contain LBP. Paint chips that fall from the exterior of buildings can potentially contaminate the soil if the paint contains lead. The USEPA has established recommendations for maximum lead soil contamination levels. No action is required if the lead concentration is less than 400 ppm in areas expected to be used by children, or less than 2,000 ppm in areas where contact by children is less likely. Soil abatement and public notice are recommended when lead levels exceed 5,000 ppm (GFAFB 2003b).

USAF policy and guidance establishes LBP management at USAF facilities. The policy incorporates by reference the requirements of 29 CFR 1910.120, 29 CFR Part 1926, 40 CFR 50.12, 40 CFR Parts 240 through 280, the CAA, and other applicable Federal regulations. In addition, the policy requires each installation to develop and implement a facility management plan for identifying, evaluating, managing, and abating LBP hazards. The Residential Lead-Based Paint Hazard Reduction Act of 1992, Subtitle B, Section 408 (commonly called Title X) regulates the use and disposal of LBP on Federal facilities. Federal agencies are required to comply with applicable Federal, state, and local laws relating to LBP activities and hazards. The State of North Dakota regulates LBP under State Rule 33-15-24, *Standards for Lead-Based Paint Activities*. The NDDH is responsible for overseeing compliance with the requirements of the LBP program. Grand Forks AFB maintains a *Lead-Based Paint Management Plan* that outlines a plan for carrying out activities required to implement the LBP management objectives and provides an overview of ongoing LBP activities and procedures (GFAFB 2003b).

In 1994, LBP surveys were conducted for materials in MFH units, play areas, and child daycare centers at Grand Forks AFB. The findings of the analysis were that 23 MFH units had LBP levels at or exceeding the Federal action level of 0.5 percent by weight (USAF 1994). LBP has been removed through various renovation and remodeling projects at the proposed project site (Braun 2009). However, it is possible that LBP remains in some buildings that were constructed prior to 1978 (GFAFB 2003a). No soil sampling has been conducted for LBP at the site of the Proposed Action.

Polychlorinated Biphenyls. Polychlorinated biphenyls (PCBs) are a group of chemical mixtures used as insulators in electrical equipment such as transformers and fluorescent light ballasts. Federal regulations govern items containing 50 to 499 ppm PCBs. Chemicals classified as PCBs were widely manufactured and used in the United States throughout the 1950s and 1960s. PCB-containing oil is typically found in older electrical transformers and light fixtures (ballasts). Transformers containing greater than 500 ppm PCBs, between 50 and 500 ppm PCBs, and less than 50 ppm PCBs are considered PCB, PCB-contaminated, and non-PCB, respectively.

All major equipment, components, and transformers with PCB concentrations of 50 ppm or greater have been removed from service or are refilled with non-PCB oils at Grand Forks AFB. However, Grand Forks AFB treats all ballasts and transformers that are not labeled PCB-free or missing date-of-manufacture labels as containing PCB (GFAFB 2003a).

Radon. Grand Forks AFB is in Federal USEPA Radon Zone 1, or the highest priority zone, where the predicted average indoor radon screening level is more than 4 pCi/L (see **Section 3.4.3.2**) (USEPA 2010c). In 2008, short-term (3- to 7-day) radon sampling was conducted at MFH units 1563-B, 1924, 1188-B, and 1188-A; and TLF Unit 6103. Results from the short-term radon tests indicated that one MFH unit (1188-B) was above the recommended action level. The remaining MFH units were below the recommended action level. Additionally, long-term (1-year) radon sampling was conducted at MFH units 1563-B, 1188-B, and 1188-A. Results from the long-term radon tests indicated that all MFH units were below the recommended action level. As new MFH units are constructed, all units are tested for radon and have been found to contain 2 to 4 pCi/L. All new MFH units have a passive system to remove radon, and if previous radon testing revealed radon levels above 3.1 pCi/L, a pump was installed to draw radon gas from the sump pit and exhaust the radon gas outside. When the new MFH units were built, 5 percent of the houses were tested for radon, and none exceeded 3.1 pCi/L (USAF 2008d).

Pesticides. Grand Forks AFB's Pest Management Plan is based on AFI 32-1053, *Pest Management Program*, and DOD Instruction 4150.07, *DOD Pest Management Program*. The plan describes the installation's pest management requirements; outlines the resources necessary for surveillance and control; and describes the administrative, safety, and environmental requirements of the Grand Forks AFB Pest Management Program. Pests included in the plan are weeds, unwanted vegetation, mosquitoes, crawling insects (e.g., ants, crickets, cockroaches), spiders, birds, mice, squirrels, and other vertebrate pests (GFAFB 2007d).

Pesticide use at the installation is primarily for mosquito control, which is accomplished through installationwide aerial spraying of Altosid™ larvicide and Trumpet™ adulticide. The treatment aircraft is a C-130H Modular Aerial Spray System specially outfitted for aerial spray application, provided and staffed by trained and certified personnel from the USAF Reserve from the Youngstown Regional Airport in Vienna, Ohio. Military public health maintains records on all pesticide applicators (CBP 2008). Grand Forks AFB has a noxious weed inventory and control plan that identifies several species of noxious weeds, such as Canada thistle, perennial sow thistle, absinth wormwood, spotted knapweed, bull thistle, and leafy spurge. The installation's grounds maintenance contractor uses Roundup and 2, 4-dichlorophenoxyacetic acid for weed killing. Several other herbicides could be used for weed control, including SFM 75 (sulfometuron methyl), WEEDestroy AM-40 amine salt, Snapshot 2.5 TG, Glyphosate 4, PENDulum granule herbicide, Aqua Neat aquatic herbicide, and Ecomazapyr 2 SL. Mixing of herbicides occurs at the grounds maintenance contractor's off-installation location and then herbicides are transported on-installation for application. Certified personnel from the 319 CES Entomology Flight and a grounds maintenance contractor perform the application (GFAFB 2008e). The pesticide chlordane has not historically been used on Grand Forks AFB (GFAFB 2006b). No additional pesticide or herbicide application other than residential applications on a case-by-case basis is carried out at Grand Forks AFB (USAF 2008e).

3.10.3 Environmental Consequences

3.10.3.1 Evaluation Criteria

Impacts on hazardous materials or hazardous waste would be considered significant if a proposed action resulted in noncompliance with applicable Federal or state regulations, or increased the amounts generated or procured beyond current Grand Forks AFB waste management procedures and capacities.

Impacts on the ERP would be considered significant if a proposed action disturbed or created contaminated sites resulting in negative effects on human health or the environment, or if a proposed action made it more difficult or costly to remediate existing contaminated sites.

3.10.3.2 Proposed Action

Hazardous Materials. Short-term, minor, adverse impacts would be expected. Construction, demolition, and renovation activities would require the use of certain hazardous materials such as paints, welding gases, solvents, preservatives, and sealants. It is anticipated that the quantity of products containing hazardous materials used during the Proposed Action would be minimal and their use would be of short duration. Contractors would be responsible for the management of hazardous materials and petroleum products, which would be handled in accordance with Federal, state, and USAF regulations. No long-term, direct or indirect, adverse impacts would be expected.

Hazardous Wastes. Short-term, minor, adverse impacts would be expected. The quantity of hazardous wastes generated from proposed construction, demolition, and renovation activities would be minor and would not be expected to exceed the capacities of existing hazardous waste disposal facilities. It is assumed that hazardous wastes would be handled under the existing DOD RCRA-compliant waste management programs and, therefore, would not be expected to increase the risks of exposure to workers and installation personnel. Prior to commencement of construction, demolition, and renovation activities, the contractor would be required to obtain the necessary permits. Some of the MFH units could have mercury-containing thermostats, ionization smoke detectors that contain Americium-241, or heat pumps that contain ozone-depleting substances. Mercury-containing thermostats are treated as universal waste in the State of North Dakota; therefore, if they are encountered during demolition or renovation, they would be removed and disposed of as universal waste in accordance with Federal, state, and local regulations. If ionization smoke detectors that contain Americium-241 or heat pumps that contain ozone-depleting substances are encountered during demolition or renovation activities, they would be removed and disposed of as hazardous waste in accordance with Federal, state, and local regulations and the Hazardous Waste Management Plan. No long-term, direct or indirect, adverse impacts would be expected.

Environmental Restoration Program. Short-term, minor, adverse impacts could be expected. Construction and demolition activities would be within in 0.5 miles of SWMUs, including SWMU-11 and SWMU-2. No impacts would be expected from SWMU-11, as it has an NFA status. No impacts on or from SWMU-2 would be expected during construction activities; however, there could be the potential for encountering contaminated groundwater or soil from SWMU-2 during construction or demolition activities. If contaminated groundwater or soil from SWMU-2 is inadvertently discovered during construction or demolition activities, the handling, storage, transportation, and disposal of hazardous substances would be conducted in accordance with applicable Federal, state, and local regulations; USAF regulations; and Grand Forks AFB management procedures. If restoration infrastructure (e.g., monitoring wells, treatment systems, conveyance pipes) is present within the proposed project area, project planning would include protection of restoration infrastructure to avoid disruption of clean-up activities and minimize potential impacts on restoration infrastructure.

Aboveground and Underground Storage Tanks. Short-term, minor, adverse impacts could be expected. Residual soil contamination from previous heating oil leaks could be present at former UST sites within MFH neighborhoods constructed before 1998. Prior to commencement of construction and demolition activities, sampling would be conducted at these former UST sites to investigate the presence of contamination. If results of the sampling were to indicate the presence of contamination, remediation efforts would take place prior to commencement of construction and demolition activities. Active ASTs and USTs currently in operation within 0.5 miles of the site of the Proposed Action are not anticipated to be affected by the Proposed Action and would continue to be used with appropriate BMPs in place (e.g., secondary containment, leak detection systems, and alarm systems).

Asbestos-Containing Material. Short-term, minor, adverse, and long-term, beneficial impacts would be expected. MFH units scheduled for demolition in the Holly neighborhood could contain ACM and, therefore, would need to be surveyed for asbestos by a state-certified inspector prior to commencement of demolition or renovation activities. In addition, water lines along Louisiana Street in the MFH area are constructed of old asbestos-containing transite. Demolition and renovation plans would be reviewed by Grand Forks AFB civil engineering personnel to ensure appropriate measures were taken to reduce potential exposure to, and release of, asbestos. All ACM discovered would be removed by state-certified individuals prior to demolition and renovation and disposed of at a USEPA-approved landfill. Contractors would be required to adhere to all Federal, state, and local regulations in addition to the *Asbestos Management Plan*. A Notification of Demolition and Renovation form would be submitted to the NDDH 10 days prior to the commencement of demolition and renovation if more than 160 ft^2 of ACM or more than 260 linear feet of asbestos-containing thermal system insulation would be disturbed (NDDH 2009b). The removal of ACM during demolition and renovation activities would result in long-term, beneficial impacts by reducing potential exposure to personnel.

USAF regulations restrict the use of ACM for new construction. AFI 32-1023 requires that a substitution study be conducted whenever the use of an ACM in construction, maintenance, or repair is considered. If it is determined that the ACM is superior in cost and performance characteristics, and has minimal actual or potential health hazards, then the ACM should be used. In all other cases non-ACM should be utilized.

Lead-Based Paint. Short-term, minor, adverse, and long-term, beneficial impacts would be expected. MFH units scheduled for demolition and the soil in the immediate vicinity of the MFH units in the Holly neighborhood could contain LBP and, therefore, would need to be surveyed and sampled by a state-certified inspector prior to demolition or renovation activities. Facilities containing LBP could be demolished without removing the LBP; however, all LBP-contaminated construction debris and LBP-contaminated soil would be disposed of at a USEPA-approved landfill. Demolition and renovation plans would be reviewed by Grand Forks AFB civil engineering personnel to ensure appropriate measures were taken to reduce potential exposure to, and release of, lead from LBP. Contractors would be required to adhere to all Federal, state, and local regulations in addition to Grand Forks AFB management plans. The removal of LBP during demolition activities would result in long-term, beneficial impacts by reducing potential exposure to personnel.

Polychlorinated Biphenyls. Short-term, negligible, adverse impacts could be expected. Grand Forks AFB is considered to be PCB-free; however, light ballasts throughout the installation are assumed to be PCB-contaminated, unless they are labeled PCB-free. If light ballasts that do not have a PCB-free label are encountered during demolition or renovation, the ballasts would be removed and handled in accordance with Federal and DOD regulations and the *Hazardous Waste Management Plan*. No long-term, direct or indirect, adverse impacts would be expected.

Radon. No impacts would be expected. Results from previous long-term radon tests indicated that all existing MFH units were below the recommended action level. As new MFH units were constructed, all units were tested for radon and have been found to contain 2 to 4 pCi/L. All new MFH units have a passive system to remove radon, and if previous radon testing revealed radon levels above 3.1 pCi/L, a pump was installed to draw radon gas from the sump pit and exhaust the radon gas outside. Radon testing requirements would become the responsibility of the PO upon commencement of the lease.

Pesticides. No impacts would be expected. The Proposed Action would not require any change in the quantities of pesticides or herbicides used or significantly alter pesticide or herbicide application areas. In accordance with the *Pest Management Plan*, the least toxic method would continue to be used for controlling pests encountered within the proposed project area. In addition, future pesticide and herbicide

applications within the proposed project area would be conducted according to Federal, state, and local regulations and the *Pest Management Plan*.

3.10.3.3 No Action Alternative

Under the No Action Alternative, Grand Forks AFB would not implement the Proposed Action and would continue to provide for the housing needs of military personnel and family members. No demolition of structures would occur as planned under the Proposed Action. There would be no change in or impacts on hazardous materials or wastes, the ERP, ASTs, USTs, PCBs, radon, or pesticides. Impacts from other hazardous materials and waste categories are identified below.

Asbestos-Containing Material. Long-term, negligible to minor, adverse impacts would be expected from the continued use of MFH units in the Holly neighborhood. MFH units in the Holly neighborhood could contain ACM; therefore, personnel occupying the units would be at risk from potential exposure to, and release of, asbestos.

Lead-Based Paint. Long-term, negligible to minor, adverse impacts would be expected from the continued use of MFH units in the Holly neighborhood. MFH units in the Holly neighborhood could contain LBP; therefore, personnel occupying the units would be at risk from exposure to, and release of, lead from LBP.

3.11 Safety

3.11.1 Definition of the Resource

A safe environment is one in which there is no, or an optimally reduced, potential for death, serious bodily injury or illness, or property damage. Human health and safety addresses both workers' health and public safety during demolition activities and facilities construction, and during subsequent operations of those facilities.

Construction Safety. Construction site safety is largely a matter of adherence to regulatory requirements imposed for the benefit of employees and implementation of operational practices that reduce risks of illness, injury, death, and property damage. The health and safety of onsite military and civilian workers are safeguarded by numerous DOD and USAF regulations designed to ensure compliance with standards issued by OSHA and the USEPA. These standards specify the amount and type of training required for industrial workers, the use of protective equipment and clothing, engineering controls, and maximum exposure limits for workplace stressors.

Safety and accident hazards can often be identified and reduced or eliminated. Necessary elements for an accident-prone situation or environment include the presence of the hazard itself together with the exposed (and possibly susceptible) population. The degree of exposure depends primarily on the proximity of the hazard to the population. Activities that can be hazardous include transportation, maintenance and repair activities, and the creation of extremely noisy environments. The proper operation, maintenance, and repair of vehicles and equipment carry important safety implications. Any facility or human-use area with potential explosive or other rapid oxidation process creates unsafe environments for nearby populations. Extremely noisy environments can also mask verbal or mechanical warning signals such as sirens, bells, or horns.

Explosives and Munitions Safety. Explosive safety clearance zones must be established around facilities used for storage, handling, or maintenance of munitions. Air Force Manual 91-201 establishes the size of the clearance zone based upon quantity-distance (QD) criteria or the category and weight of the explosives contained within the facility.

AFI 91-301, *Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH) Program*, implements AFPD 91-3, *Occupational Safety and Health*, by outlining the AFOSH Program. The purpose of the AFOSH Program is to minimize loss of USAF resources and to protect USAF personnel from occupational deaths, injuries, or illnesses by managing risks. In conjunction with the USAF Mishap Prevention Program, these standards ensure all USAF workplaces meet Federal safety and health requirements. This instruction applies to all USAF activities.

3.11.2 Existing Conditions

Grand Forks AFB is a secure military installation. Access is limited to military personnel, civilian employees, and military families. Grand Forks AFB provides emergency services (i.e., fire, law enforcement, and other emergency services) to the MFH areas, which includes emergency response and force protection. Therefore, emergency situations can be responded to within a quick timeframe.

Construction Safety. All contractors performing construction activities are responsible for following ground safety regulations and workers compensation programs and are required to conduct construction activities in a manner that does not pose any risk to workers or personnel. Industrial hygiene programs address exposure to hazardous materials, use of personal protective equipment, and availability of Material Safety Data Sheets (MSDS). Industrial hygiene is the responsibility of contractors, as applicable. Contractor responsibilities are to review potentially hazardous workplace operation; to monitor exposure to workplace chemicals (e.g., asbestos, lead, hazardous material), physical hazards (e.g., noise propagation), and biological (e.g., infectious waste) agents; to recommend and evaluate controls (e.g., ventilation, respirators) to ensure personnel are properly protected or unexposed; and to ensure a medical surveillance program is in place to perform occupational health physicals for those workers subject to any accidental chemical exposures.

LBP surveys conducted in 1994 found that 23 MFH units had LBP levels at or exceeding the Federal action level of 0.5 percent by weight (USAF 1994). Although LBP has been removed through various renovation and remodeling projects, it is possible that LBP remains in some homes that were constructed prior to 1978 (Braun 2009, GFAFB 2003a). During a 1993 survey, ACM was found in MFH units at Grand Forks AFB. Much of the ACM was likely removed through renovation and remodeling activities (GFAFB undated c, GFAFB undated d, GFAFB undated e, GFAFB undated f, Braun 2009). The water lines along Louisiana Street in the MFH area contain ACM and are reportedly in poor condition (GFAFB 2008d).

SWMU-11 and SWMU-2 are within 0.5 miles of the site of the Proposed Action. SWMU-11 has an NFA status and SWMU-2 is under LTM (see **Section 3.10.2**, ***Environmental Restoration Program***) (see **Figure 3-6**).

Explosives and Munitions Safety. Grand Forks AFB has several activities that require QD explosive safety clearance zones and these must be established around facilities used for the storage, handling, or maintenance of munitions. QD arcs on Grand Forks AFB are mostly in the southeastern portion of the installation and the northeastern side of the airfield and are associated with the munitions storage area and the hazardous cargo parking pad. QD arcs are approximately 0.25 miles south of the southernmost point of Parcel 1, and 1 mile south of Parcel 2. Other QD arcs associated with the airfield are approximately 0.5 miles west of Parcel 2. There are no explosives safety waivers in effect for Grand Forks AFB. Historically, personally owned small arms ordnance has been stored in the MFH units. No military-owned ordnance is known or suspected to have been stored, used, or disposed of at the Proposed Action site.

3.11.3 Environmental Consequences

3.11.3.1 Evaluation Criteria

Any increase in safety risks would be considered an adverse effect on safety. A proposed action could have a significant effect with respect to health and safety if the following were to occur:

- Substantially increase risks associated with the safety of construction personnel, contractors, or the local community
- Substantially hinder the ability to respond to an emergency
- Introduce a new health or safety risk for which the installation is not prepared or does not have adequate management and response plans in place.

3.11.3.2 Proposed Action

Short-term, negligible to minor, direct, adverse and long-term, beneficial effects on health and safety would be expected from the Proposed Action.

Construction Safety. Short-term, minor, direct, adverse effects could occur from implementation of the Proposed Action. The short-term risk associated with construction contractors would slightly increase at Grand Forks AFB during the normal workday as construction activity levels would increase. However, all construction contractors are required to follow and implement OSHA standards to establish and maintain safety procedures. Demolition of MFH homes and the construction of group-desired community features associated with the Proposed Action would not pose new or unacceptable safety risks to installation personnel or activities at the installation. No long-term, adverse effects on safety would be expected.

Short-term, negligible to minor, adverse impacts would be expected from implementation of the Proposed Action. Because of their ages, some of the MFH homes and associated infrastructure (e.g., play areas, child daycare, and water lines), slated for conveyance should be assumed to contain ACM and LBP; these materials require appropriate removal, handling, and disposal during renovation and demolition activities by qualified personnel. Short-term, adverse impacts could be experienced, but adherence to all Federal, state, and local regulations and Grand Forks AFB management plans (GFAFB 2003b, GFAFB 2008h, GFAFB 2008g, GFAFB 2008f) would result in negligible effects on safety during demolition, construction, and infrastructure activities. Long-term, beneficial impacts would be expected from the removal of LBP and ACM materials by reducing exposure to military personnel and families.

Short-term, negligible to minor, adverse impacts could be expected on safety as construction and demolition activities would be within in 0.5 miles of two SWMUs (i.e., SWMU-11 and SWMU-2). No impacts would be expected from SWMU-11 as it has an NFA status. No impacts on or from SWMU-2 would be expected during construction activities; however, equipment operators and workers should be aware of the potential for uncovering residual contamination. All site work would be conducted under an approved site-specific health and safety plan. Current site-specific information about contamination and restoration infrastructure would be obtained prior to commencement of construction and demolition activities. During demolition of structures at the site, LBP sampling in building materials and soils should be conducted. Procedures for proper handling of contaminated soils discovered during site preparation and excavation would be prepared and implemented through a site-specific waste management plan.

Explosives and Munitions Safety. Because there are no munitions stored or handled in the immediate vicinity of the Proposed Action at Grand Forks AFB, no short- or long-term, adverse impacts on explosives and munitions safety would be anticipated. Further, munitions transport would not occur within the site of the Proposed Action during demolition or construction activities to minimize contractors' exposure to safety hazards associated with explosives.

3.11.3.3 No Action Alternative

Under the No Action Alternative, Grand Forks AFB would not implement the Proposed Action. Grand Forks AFB would continue to provide for the housing needs of military personnel and family members, which would result in the continuation of existing conditions as described in **Section 3.11.2**. No short- or long-term adverse impacts on safety would be expected from the No Action Alternative.

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4. Cumulative and Adverse Impacts

4.1 Definition of Cumulative Effects

CEQ defines cumulative effects as the "impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 CFR 1508.7). Although individual impacts of various actions might be minor, taken together their effects could be significant.

Impacts subject to cumulative effects analysis are identified by reference to the temporal span and spatial area in which the Proposed Action would cause effects.

4.2 Projects Identified With the Potential for Cumulative Effects

It is estimated that the construction and demolition of MFH would occur over 6 years. For the purposes of this analysis, the temporal span of the Proposed Action includes projects reasonably foreseeable during the 6-year construction, demolition, and renovation period. For most resources, the spatial area for consideration of cumulative effects is within the boundary of Grand Forks AFB, and more specifically, the eastern portion of Grand Forks AFB, near the MFH parcels (i.e., past, ongoing, and proposed demolition of MFH units). The essence of the Proposed Action is redevelopment (i.e., demolition, renovation, use, and maintenance of MFH on the installation). An EIS has been prepared that analyzed construction and infrastructure projects associated with the beddown of remotely piloted aircraft (RPA). Ground-based improvements to support the RPA mission include 22 construction, demolition, and repair and renovation projects to include construction of a new four-bay hangar, communication towers, antennas, video surveillance systems, communications infrastructure, and aviation gas tanks; improvements to the Bravo Ramp; and demolition of Hangars 520 and 521. In addition, an Installation Development Environmental Assessment (IDEA) was prepared to evaluate construction, demolition, and infrastructure projects on an installationwide level (GFAFB 2010b). The IDEA included 8 demolition projects demolishing 33 structures throughout Grand Forks AFB, 12 construction projects, and 7 infrastructure projects.

Projects analyzed in the IDEA were in a variety of areas designated in the installation land use plan for Administrative, Aircraft O&M, Airfield, Community, Housing (Family), Housing (Unaccompanied), Industrial, Medical, Open Space, and Outdoor Recreation. Many of these areas are presently developed, and some of the projects would include demolition of existing old or inadequate facilities. Nevertheless, there would continue to be a small degree of removal vegetation and open space. That is, construction would increase impervious surfaces, possibly eliminate small portions of habitat, and require the removal of vegetation (both native and ornamental). These effects would be minor because most areas of Grand Forks AFB are previously disturbed. In the context of Grand Forks AFB, these types of cumulative effects are long-term and adverse, but minor.

Numerous projects analyzed in the RPA EIS (HQ AMC 2010) and IDEA would be expected to occur concurrently with the Proposed Action, if implemented. The MFH construction, in combination with the installation development analyzed in the IDEA, would have potential cumulative effects on air quality, soils, water resources, and biological resources. Effects on air quality would occur from site preparation that would produce fugitive dust, and the use of heavy construction equipment would produce air emissions. These effects on air quality would be limited to Grand Forks AFB. Effects on air quality would be of a finite duration, lasting only during the period of site preparation, demolition, and construction activities. Effects on soils and water resources could occur from ground-disturbing activities

during site preparation when soils could be eroded and sedimentation of nearby water bodies could occur. Effects would be reduced by implementing BMPs (see **Section 4.3**).

Under the Proposed Action, there would be a substantial reduction in the number of MFH units for USAF and other qualified personnel. Past management practices, based on a "customer demand" philosophy, led to the existing inventory of 833 MFH units. Implementation of the Proposed Action, reflecting a different management philosophy[3], would decrease the inventory of housing to 547 units. The present action would reverse the past actions of constructing and maintaining a large on-installation MFH inventory for USAF personnel. The majority of MFH for personnel assigned to Grand Forks AFB would continue to be supplied by the local economy. No cumulative effects would be expected as a result of comparing the present action to historic actions leading to the installation's relatively high inventory of MFH.

4.3 Reasonable and Prudent Measures and Best Management Practices

The Proposed Action would not result in significant adverse effects on the land or the surrounding area. However, BMPs and other minimization measures would be implemented to eliminate adverse effects or reduce the impacts to insignificance.

General BMPs that might be included as parts of the Proposed Action are summarized as follows:

- Clearing and grubbing would be timed with construction to minimize the exposure of cleared surfaces. Such activities would not be conducted during periods of wet weather. Construction activities would be staged to allow for the stabilization of disturbed soils.
- Fugitive dust-control techniques such as soil watering and soil stockpiling would be used to minimize adverse effects. All such techniques would conform to applicable regulations.
- Soil erosion-control measures, such as soil erosion-control mats, silt fences, straw bales, diversion ditches, riprap channels, water bars, water spreaders, and hardened stream crossings, would be used as appropriate.
- Where feasible, areas of impervious surface would be minimized through shared parking, decked or structured parking, increased building height, or other measures as appropriate.
- Disturbance of environmental resources and topography would be minimized by integrating existing vegetation, trees, and topography into site design.
- Trees should be evaluated for potential relocation prior to removal during construction or demolition activities. There are several young trees in the urban forest canopy due to recent tree planting initiatives. Trees are USAF property and cannot be sold. Landscape designs and removals must be coordinated with the installation.

[3] In a revised paradigm, the USAF analyzes its housing needs in a way that typically results in there being fewer government housing units. To establish the on-installation minimum housing requirement, installation officials identify four key demographic areas: the number of key and essential personnel, the number of historic housing units, 10 percent of all grades (enlisted and officer), and the number of service members whose total income is less than 50 percent of the average median income in the community. Using the highest number in each of those categories by grade, the installation determines its minimum on-installation housing requirement, also called the "floor requirement." The number of remaining personnel, representing those who need to be housed off installation, is then compared to the availability of homes in the local community. When the community can meet the entire requirement, only the floor number is provided on-installation. If the community cannot provide adequate housing for those people, the number of people who cannot be housed in the local community is added to the floor requirement to get the total number of housing units that the USAF needs to provide on-installation.

- The spread of noxious weeds could be controlled by avoiding activities in or adjacent to heavily infested areas, removing seed sources and propagules from the site prior to conducting activities, or limiting operations to non-seed-producing seasons. Following activities that expose soils, the area would be covered with weed seed-free mulch or seeded with native species.
- Any ground-breaking construction activities should be performed before migratory birds return to Grand Forks AFB or after all young have fledged to avoid incidental take.
- If demolition is scheduled to start during the period in which migratory bird species are present, measures would be taken to prevent migratory birds from establishing nests in the potential impact area, including: covering equipment and structures, and using various excluders (e.g., noise).
- Swallows often nest in abandoned housing units. If any nests are established, buffer areas should be created, and the birds should not be harassed until all young have fledged and have left the nest site. Confirmation that all young have fledged should be made by a qualified biologist.
- If construction is scheduled to start during the period when migratory birds are present, a site-specific survey for nesting migratory birds should be performed starting at least 2 weeks prior to site clearing.
- Provisions would be taken to prevent pollutants from reaching the soil, groundwater, or surface water. During project activities, contractors would be required to perform daily inspections of equipment, maintain appropriate spill-containment materials on site, and store all fuels and other materials in appropriate containers. Equipment maintenance activities would not be conducted on the construction site.
- Prior to commencement of construction and demolition activities, sampling would be conducted at UST sites to investigate the presence of contamination. If results of the sampling were to indicate the presence of contamination, remediation efforts would take place prior to commencement of construction and demolition activities.
- Physical barriers and "no trespassing" signs would be placed around the demolition and construction sites to deter children and unauthorized personnel. All construction vehicles and equipment would be locked or otherwise secured when not in use.
- Construction equipment would be used only as necessary during the daylight hours and would be maintained to the manufacturer's specifications to minimize noise impacts.

Construction impacts are short-term environmental effects resulting from the process of building the Proposed Action. Construction impacts might involve temporary changes in noise levels, air quality, water quality, land use, and community access.

4.4 Unavoidable Adverse Impacts

Unavoidable adverse impacts would result from the implementation of the Proposed Action. None of these impacts would be significant.

Hazardous Materials and Waste. The generation of hazardous wastes is an unavoidable condition associated with the Proposed Action. Only small quantities of hazardous materials from common household cleaners, automobile products, and similar materials, are stored at the site of the Proposed Action. There are no hazardous waste storage areas within the site of the Proposed Action. Some ACM and LBP could be present within the Holly neighborhood units proposed for demolition; however, it is likely that much of the ACM was removed through various renovation and remodeling activities (Braun 2009, GFAFB undated c, GFAFB undated d, GFAFB undated e, GFAFB undated f). Therefore, the

quantity of hazardous wastes generated from proposed construction, demolition, and renovation activities would be minor and would not be expected to exceed the capacities of existing hazardous waste disposal facilities. It is assumed that hazardous wastes would be handled under the existing DOD RCRA-compliant waste management programs and, therefore, would not be expected to increase the risks of exposure to people or the environment. Hazardous waste would be handled and disposed of in accordance with Federal, state, and local regulations and Grand Forks AFB's Hazardous Waste Management Plan. The generation of hazardous wastes from the Proposed Action would not significantly increase over baseline conditions and, therefore, is not considered significant.

Energy Resources. The use of nonrenewable resources is an unavoidable occurrence, although not considered significant. Energy resources, although relatively small in quantity, would be committed to the Proposed Action. The Proposed Action would require the use of fossil fuels, a nonrenewable natural resource, for the operation of construction equipment. However, the use of these resources (e.g., fossil fuels) would be temporary and only last as long as the proposed construction, renovation, and demolition activities. No long-term commitments of energy resources would be required under the Proposed Action, as any energy requirements of the proposed community facilities would be offset by the demolition of 286 surplus, inadequate MFH units. Demolition of the 286 MFH units would result in a long-term decrease in the energy needed to provide power to the housing units.

4.5 Compatibility of the Proposed Action and Alternatives with the Objectives of Federal, Regional, State, and Local Land Use Plans, Policies, and Controls

Impacts on the ground surface as a result of the Proposed Action would occur entirely within the boundaries of Grand Forks AFB. Construction activities would not result in any significant or incompatible land use changes on- or off-installation. The projects under the Proposed Action would be at locations consistent with current and future land use zones. Consequently, construction activities would not be in conflict with future installation land use policies or objectives. The Proposed Action would not conflict with any applicable off-installation land use ordinances or designated clear zones.

4.6 Relationship Between the Short-term Use of the Environment and Long-term Productivity

Short-term uses of the biophysical components of human environment include direct construction-related disturbances and direct impacts associated with an increase in population and activity that occurs over a period of less than 5 years. Long-term uses of the human environment include those impacts occurring over a period of more than 5 years, including permanent resource loss.

Several kinds of activities could result in short-term resource uses that compromise long-term productivity. Loss of especially important habitats and consumptive use of high-quality water at nonrenewable rates are examples of actions that affect long-term productivity.

The Proposed Action would not result in an intensification of land use at Grand Forks AFB and in the surrounding area. Development of the Proposed Action would not represent a significant loss of open space. Therefore, it is anticipated that the Proposed Action would not result in any cumulative land use or aesthetic impacts. Long-term productivity of these sites would be increased by the implementation of the Proposed Action.

4.7 Irreversible and Irretrievable Commitments of Resources

The irreversible environmental changes that would result from implementation of the Proposed Action involve the consumption of material resources, energy resources, land, biological habitat, human resources, and wetlands. The use of these resources is considered to be permanent.

Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that use of these resources would have on future generations. Irreversible effects primarily result from use or destruction of a specific resource that cannot be replaced within a reasonable timeframe (e.g., energy and minerals).

Material Resources. Material resources used for the Proposed Action and alternatives include building materials (for renovation or construction of facilities), concrete and asphalt (for parking lots and roads), and various material supplies (for infrastructure) and would be irreversibly lost. Most of the materials that would be consumed are not in short supply, would not limit other unrelated construction activities, and would not be considered significant.

Energy Resources. No significant impacts would be expected on energy resources used as a result of the Proposed Action, though any energy resources consumed would be irretrievably lost. These include petroleum-based products (e.g., gasoline and diesel), natural gas, and electricity. During construction, gasoline and diesel would be used for the operation of construction vehicles. During operation, gasoline or diesel would be used for the operation of privately owned and government-owned vehicles. Natural gas and electricity would be used by operational activities. Consumption of these energy resources would not place a significant demand on their availability in the region.

Biological Habitat. The Proposed Action would result in the loss of some vegetation and wildlife habitat at the proposed construction areas.

Human Resources. The use of human resources for construction and operation is considered an irretrievable loss, but only in that it would preclude such personnel from engaging in other work activities. However, the use of human resources for the Proposed Action and alternatives represent employment opportunities, and is considered beneficial.

Soils. The Proposed Action would result in a local reduction in soil permeability and groundwater recharge rates as a result of soil compaction. However, this would be considered negligible when compared with the total recharge area available.

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6. References

ACHP 2006 — Advisory Council on Historic Preservation (ACHP). 2006. *Program Comment for World War II and Cold War Era (1939-1974) Ammunition Storage Facilities.* 18 August 2006.

Berger Enterprises 2009 — Berger Enterprises. 2009. Company profile. Available online: <http://bergerenterprises.net/cppr-demolition-contractors-emerado-nd.html>. Accessed 15 December 2009.

BLS 2010a — Bureau of Labor Statistics (BLS). 2010. North Dakota Unemployment Rates 2000-2010 Databases. "Local Area Unemployment Statistics." Available Online http://data.bls.gov/PDQ/servlet/SurveyOutputServlet?data_tool=latest_numbers&series_id=LASST38000003. Accessed 18 March 2010.

BLS 2010b — BLS. 2010. "Regional and State Employment and Unemployment Summary." U.S Unemployment rates. Available Online: <http://www.bls.gov/news.release/laus.nr0.htm>. Accessed 18 March 2010.

Braun 2009 — Braun, Steve. 2009. Personal communication between Steve Braun (Grand Forks AFB) and Sean McCain (HDR) regarding hazardous materials. 18 February 2009.

Braun 2010a — Braun, Steve. 2010. Correspondence between Steve Braun (Grand Forks AFB) and Sean McCain (HDR) regarding storm water. 24February 2010.

Braun 2010b — Braun, Steve. 2010. Correspondence between Steve Braun (Grand Forks AFB) and Sean McCain (HDR) regarding active ASTs and USTs. February 2010.

CBP 2008 — U.S. Customs and Border Protection (CBP). 2008. *Draft Environmental Assessment (EA) for the Beddown and Flight Operations of Unmanned Aerial Systems (UAS) at Grand Forks Air Force Base, North Dakota, U.S. Customs and Border Protection Air and Marine.* June 2008.

Dalrymple 2010 — Dalrymple, Joseph. 2010. E-mail correspondence between Mr. Joseph Dalrymple (USAF AMC 319 CES/CEAO) and Ms. Jennifer Rose (HDR|e²M) and Mr. Sean McCain (HDR) regarding the volume of water used at the installation. 18 February 2010.

DOD 2005 — Department of Defense (DOD). 2005. Memorandum from the Office of the Under Secretary of Defense regarding the implementation of the Sikes Act improvement amendments and supplemental guidance concerning leased lands. 17 May 2005.

DOD 2010a — DOD. 2010. Memorandum from Dorothy Robyn (Office of the Under Secretary of Defense) regarding DOD Implementation of Storm Water Requirements under Section 438 of the Energy Independence and Security Act. 19 January 2010.

DOD 2010b — DOD. 2010. *Unified Facilities Criteria (UFC): Low Impact Development*. 6 April 2010.

DOE/EIA 2010 Department of Energy/Energy Information Administration (DOE/EIA). 2010. *State Carbon Dioxide Emissions, Emissions Detail by State, North Dakota*. Released 4 February 2010. Available online: <http://www.eia.doe.gov/oiaf/1605/state/state_emissions.html>. Accessed 18 March 2010.

ELI 2008 Environmental Law Institute (ELI). 2008. *State Wetland Protection: Status, Trends, & Model Approaches. Appendix: State Profiles.* "North Dakota." 2008.

FEMA 1986 Federal Emergency Management Agency (FEMA). 1986. A Unified National Program for Floodplain Management, March 1986.

FICON 1992 Federal Interagency Committee on Noise (FICON). 1992. *Federal Agency Review of Selected Airport Noise Analysis Issues*. August 1992.

GFAFB undated a Grand Forks Air Force Base (GFAFB). Undated. *Solid Waste Management Units and Areas of Concern*.

GFAFB undated b GFAFB. Undated. List of Aboveground Storage Tank Contents, Statuses, and Locations at Grand Forks AFB.

GFAFB undated c GFAFB. Undated. *Asbestos Space Detail Report: 1758B Iowa Street*.

GFAFB undated d GFAFB. Undated. *Asbestos Space Detail Report: 1767A Iowa Street*.

GFAFB undated e GFAFB. Undated. *Asbestos Space Detail Report: 1877B Iowa Street*.

GFAFB undated f GFAFB. Undated. *Asbestos Space Detail Report: 1920A Hawaii Street*.

GFAFB 2003a GFAFB. 2003. *Draft Environmental Assessment Multiple Operation & Maintenance Construction Projects at Grand Forks AFB, North Dakota*. August 2003.

GFAFB 2003b GFAFB. 2003. *Lead-Based Paint Management Plan* for Grand Forks Air Force Base. December 2003.

GFAFB 2003c GFAFB. 2003. *Final Spill Prevention Control and Countermeasures Plan*. April 2003.

GFAFB 2004 GFAFB. 2004. *Final Biological Survey Update Report.* August 2004.

GFAFB 2005 GFAFB. 2005. *2004-2008 Update for Integrated Natural Resources Management Plan, Grand Forks Air Force Base, North Dakota*. December 2005.

GFAFB 2006a GFAFB. 2006. *Fire Station Wetlands Delineation Summary Report 2005 for the Grand Forks Air Force Base.* Prepared by CH2MHILL. January 2006.

GFAFB 2006b GFAFB. 2006. *Final Report Environmental Baseline Survey: Enhanced Use Lease of Potential EUL Acreage.* December 2006

GFAFB 2007a GFAFB. 2007. *Environmental Assessment: Construct Airfield Lighting Vault and Demolish Building 531 at Grand Forks Air Force Base*. August 2007.

GFAFB 2007b GFAFB. 2007. *Wetland Delineation Summary Report 2006*. Prepared by CH2MHILL. March 2007.

GFAFB 2007c GFAFB. 2007. *Final Environmental Assessment Demolition of Alpha Ramp Grand Forks Air Force Base, North Dakota.* Prepared by HDR Engineering, Inc. (HDR). January 2007.

GFAFB 2007d GFAFB. 2007. *Pest Management Plan for Grand Forks Air Force Base, North Dakota.* April 2007.

GFAFB 2008a GFAFB. 2008. *Economic Impact Analysis: Fiscal Year 2008*. 30 September 2008.

GFAFB 2008b GFAFB. 2008. *Draft Northern Group Housing Privatization Grand Forks AFB Site Orientation Visit and Project Development Team #1 After Action Report*. 21-23, and 25 October 2008.

GFAFB 2008c GFAFB. 2008. *Final Environmental Assessment Proposed Demolition of 35 Buildings within the Munitions Storage Area at Grand Forks Air Force Base North Dakota.* August 2008.

GFAFB 2008d GFAFB. 2008. *95% Grand Forks Air Force Base Housing Community Profile (HCP).* Prepared by Parsons Corporation. 2 July 2008.

GFAFB 2008e GFAFB. 2008. *Final Solid Waste Management Plan* for Grand Forks AFB and SOW for Refuse Collection/Recycling Services (2003). 1 March 2008.

GFAFB 2008f GFAFB. 2008. *Asbestos Operating Plan for Grand Forks Air Force Base.* Prepared by 319 CES/CEA. April 2008.

GFAFB 2008g GFAFB. 2008. *Asbestos Management Plan for Grand Forks Air Force Base.* Prepared by 319 CES/CEA. April 2008.

GFAFB 2008h GFAFB. 2008. Updated *Installation Hazardous Waste Management Plan* for Grand Forks AFB. January 2008.

GFAFB 2009a GFAFB. 2009. *Final Environmental Baseline Survey Supporting the Privatization of Military Family Housing at Grand Forks Air Force Base, North Dakota*. July 2009.

GFAFB 2009b GFAFB. 2009. *Grand Forks Air Force Base Instruction 32-4004, Bow Hunting*. 9 April 2009.

GFAFB 2009c GFAFB. 2009. *Environmental Baseline Survey Supporting the Privatization of Military Family Housing at Grand Forks Air Force Base, North Dakota*. September 2009.

GFAFB 2009d GFAFB. 2009. *Spill Prevention, Control, and Countermeasures (SPCC) Plan*. 30 January 2009.

GFAFB 2010a — GFAFB. 2010. Memorandum for Record: Housing Privatization including Prairie View Nature Preserve. Prepared by Kristen Rundquist, Natural Resource Manager, 319 CES/CEAN, Grand Forks AFB. March 2010.

GFAFB 2010b — GFAFB. 2010. *Draft Environmental Assessment of Installation Development at Grand Forks Air Force Base, North Dakota*. April 2010.

GFAFB 2010c — GFAFB. 2010. *Final 2009 Biological Survey Grand Forks Air Force Base, Grand Forks County, North Dakota*. July 2010.

GFAFB 2011 — GFAFB. 2011. Grand Forks AFB Bird Checklist – January 2011.

Grand Forks County 2006a — Grand Forks County. 2006. *Grand Forks County 2035 Land Use Plan*. 7 March 2006. Available online: <http://www.grandforkscountygov.com/PlanningandZoningAppForms/New%20Documents/Draft%202035%20Land%20Use%20Plan.pdf>. Accessed 2 December 2009.

Grand Forks County 2006b — Grand Forks County. 2006. *Grand Forks County Zoning Resolution.* September 2006.

Grand Forks County 2009 — Grand Forks County. 2009. Grand Forks County North Dakota Zoning Map. Available online: <http://www.gfcounty.nd.gov/sites/default/files/Zoning%20Map%20Website.jpg>. Accessed 2 December 2009.

Hagen et al. 2005 — Hagen, S.K., P.T. Isakson, and S.R. Dyke. 2005. *North Dakota Comprehensive Wildlife Conservation Strategy*. North Dakota Game and Fish Department, Bismarck, ND. Last updated December 2005. Available online: <http://www.gf.nd.gov/conservation/cwcs.html>. Accessed 10 December 2009

HQ AMC 2010 — Headquarters Air Mobility Command (HQ AMC). 2010. *Draft Environmental Impact Statement for the BRAC Beddown and Flight Operations of Remotely Piloted Aircraft (RPA), Grand Forks Air Force Base, North Dakota*. January 2010.

HQ USAF 2007 — Headquarters U.S. Air Force (HQ USAF). 2007. *Air Force Housing Privatization*. Available online: <http://www.defensecommunities.org/Downloads/Winter07/Kuhn.pdf>. Accessed 15 December 2008.

Mekinock Township 1979 — Mekinock Township. 1979. *Mekinock Township Land Development Code-Zoning Ordinance and Subdivision Regulations*. 1979.

Mekinock Township 1996 — Mekinock Township. 1996. *Land Use Plan*. 4 December 1996.

Murphy and Chaterjee 1976 — Murphy, K., and S. Chaterjee. 1976. *Development of Predictive Criteria for Demolition and Construction Solid Waste Management*. Technical Report N-15/ADA033646 U.S. Army Construction Engineering Research Laboratory. October 1976.

MWH 2008 MWH Americas, Inc. (MWH). 2008. *Pricing and Marketing Assessment Report Northern Housing Privatization Group (Minot AFB, ND, Mountain Home AFB, ID, Cavalier AFB, ND, Grand Forks AFB, ND, Ellsworth AFB, SD)*. April 2008.

MWH 2010 MWH. 2010. *Air Force Northern Group: BD, SD, ID, & NM. Housing Privatization – Fact Sheet*. February 2010.

NDDH 1998 North Dakota Department of Health (NDDH). 1998. Ambient Air Quality Standards. Available online: <http://www.legis.nd.gov/information/acdata/pdf/33-15-02.pdf>. Accessed 18 March 2010.

NDDH 2005 NDDH. 2005. *Issuance of NDPDES Industrial Storm Water Permit No NDR05-000 Effective 04-11-05 – Exp 03-31-10*. April 2005.

NDDH 2007 NDDH. 2007. *Air Pollution Control Title V Permit to Operate*. October 2007.

NDDH 2009a NDDH. 2009. Division of Waste Management. *North Dakota Hazardous Waste Compliance Guide.* January 2009. Available online: <http://www.ndhealth.gov/wm/Publications/NorthDakotaHazardousWasteComplianceGuide.pdf>. Accessed 16 March 2010.

NDDH 2009b NDDH. 2009. *Asbestos Control Program*. Available online: http://www.ndhealth.gov/aq/iaq/asb/. Accessed 17 March 2010.

NDDH 2009c NDDH. 2009. Waste Management Division - Grand Forks Municipal Solid Waste Landfill Permit 0347. 16 April 2009.

NOAA 1994 National Oceanic and Atmospheric Administration (NOAA). 1994. "Guidelines and Principles for Social Impact Assessment." Available online: <http://www.nmfs.noaa.gov/sfa/social_impact_guide.htm>. Accessed 23 March 2010.

NRCS 1999 Natural Resource Conservation Service (NRCS). 1999. "How Our Land is Used." Available online: <http://www.nrcs.usda.gov/technical/NRI/maps/meta/m5116.html>. Accessed 15 March 2010.

NRCS 2010 NRCS. 2010. "Web Soil Survey." Available online: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed 8 March 2010.

OWS 2010 Operation Walking Shield (OWS). Undated. *Operation Walking Shield*. Available online: < http://www.walkingshield.org/operation.shtml>. Accessed 2 February 2010.

SHSND 2006 State Historical Society of North Dakota (SHSND). 2006. Letter from Merlan Paaverud (SHPO ND) to Mary Giltner regarding possible demolition/ removal of 325 housing structures and 7 generic bus shelters at GFAFB. 20 September 2006.

SHSND 2007 — SHSND. 2007. Letter from Merlan Paaverud (SHPO ND) to Mary Giltner and Kristen Rundquist regarding 15 housing and 20 garages proposed for demolition at GFAFB. 10 May 2007.

USAF AMC 2008 — United States Air Force Air Mobility Command (USAF AMC). 2008. *Final Integrated Cultural Resources Management Plan, Grand Forks Air Force Base, Grand Forks, North Dakota 2008-2012*. 2008.

USAF 1994 — United States Air Force (USAF). 1994. *Final Informal Technical Information Report Documenting Lead-Based Paint Facility Inspections Performed at Grand Forks Air Force Base including Statement of Work Modifications*. November 1994.

USAF 1995 — USAF. 1995. *AICUZ Study, Volumes I and II, for Grand Forks AFB*. May 1995.

USAF 1998 — USAF. 1998. *Land Use Planning*. Air Force Pamphlet 32-1010 (AFPAM32-1010). November 1, 1998. Available online: <http://www.e-publishing.af.mil/shared/media/epubs/AFPAM32-1010.pdf>. Accessed 19 October 2009.

USAF 2003 — USAF. 2003. *AICUZ Noise Study*. 2003.

USAF 2006 — USAF. 2006. *General Plan: Grand Forks Air Force Base, ND*. April 2006.

USAF 2007 — USAF. 2007. *Department of the Air Force Lease for Hay Crop Purposes Located on Grand Forks Air Force Base (447 Acres)*. April 2007.

USAF 2008a — USAF. 2008. *Existing Land Use Plan*. April 2008.

USAF 2008b — USAF. 2008. *2007 Migration and Breeding Bird Surveys for the Grand Forks Air Force Base.* Prepared by Tim Driscoll, Ph.D. May 2008.

USAF 2008c — USAF. 2008. *Management Action Plan for Installation Restoration Program for Grand Forks AFB*. October 2008.

USAF 2008d — USAF. 2008. Memorandum for Record: Indoor Air Quality Survey (Mold, Drinking Water, Radon, General IAQ), Bldg 1188B. 13 November 2008.

USAF 2008e — USAF. 2008. *Environmental Baseline Survey, Renewal of Lease DA-25-066-ENG-4725 with Grand Forks Public School District on Grand Forks AFB, North Dakota*. 26 August 2008.

USAF 2010 — USAF. 2010. *Privatization of Military Family Housing, Northern Group: Minot AFB, ND; Grand Forks AFB, ND; Cavalier AFS, ND; Ellsworth AFB, SD; Mountain Home AFB, ID; and Cannon AFB, NM: Draft One-Step Request for Qualification*. 9 February 2010.

USAF and Gannett Fleming 2004 — USAF and Gannett Fleming. 2004. *Traffic Engineering Study: Grand Forks Air Force Base, ND*. January 2004.

USCB 1990 U.S Census Bureau (USCB). 1990. American Fact Finder. Available online: <http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=DEC&_tabID=DEC2&_submenuID=datasets_1&lang=en&ts=203863707222>. Accessed 30 November 2009.

USCB 2000a USCB. 2000. "Geography Quick Facts. Grand Forks County, ND." Square Miles. Available Online. <http://quickfacts.census.gov/qfd/states/38/38035.html>. Accessed 16 March 2010.

USCB 2000b USCB. 2000. "North Dakota - DP-1. Profile of General Demographic Characteristics: 2000." Available Online: < http://factfinder.census.gov/... QTTable?_bm=y&-geo_id=04000US38&-qr_name=DEC_2000_SF1_U_DP1&-ds_name=DEC_2000_SF1_U >. Accessed 15 March 2010.

USEPA 1971 U.S. Environmental Protection Agency (USEPA). 1971. *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances.* 31 December 1971.

USEPA 1974 USEPA. 1974. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety.* Publication No. 550/9-74-004, Washington D.C. March 1974.

USEPA 1981a USEPA. 1981. Noise Effects Handbook. A Desk Reference to Health and Welfare Effects of Noise. Office of Noise Abatement and Control. October 1979, Revised July 1981. Available online: <http://nonoise.org/epa/Roll7/roll7doc27.pdf>. Accessed 16 March 2010.

USEPA 1981b USEPA. 1981. "Noise and its Measurement." January 1981. Available online: <http://nonoise.org/epa/Roll19/roll19doc49.pdf>. Accessed 16 March 2010.

USEPA 2002a USEPA. 2002. Part 81 - Designation of Areas for Air Quality Planning Purposes - Table of Contents, Subpart C – Section 107 Attainment Status Designations, Sec. 81.335, North Dakota. Available online: <http://edocket.access.gpo.gov/cfr_2002/julqtr/pdf/40cfr81.335.pdf>. Accessed 18 March 2010.

USEPA 2002b USEPA. 2002. AirData Tier Report for State of North Dakota Air Quality Control Region 172. Available online: <http://www.epa.gov/air/data/geosel.html>. Accessed 18 March 2010.

USEPA 2009a USEPA. 2009. *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act.* December 2009.

USEPA 2009b USEPA. 2009. *Characterization of Building-Related Construction and Demolition Debris in the United States*. Prepared by Franklin Associates.

USEPA 2010a USEPA. 2010. *National Ambient Air Quality Standards*. Last updated on 3 June 2010. Available online < http://www.epa.gov/air/criteria.html>. Accessed on 7 June 2010.

USEPA 2010b — USEPA. 2010. "Region 8 Sole Source Aquifer (SSA) Program." Available online http://www.epa.gov/region8/water/solesource.html. Accessed 16 March 2010.

USEPA 2010c — USEPA. 2010. "EPA Map of Radon Zones." Available online: <http://www.epa.gov/radon/states/northdakota.html#zone%20map>. Accessed 16 March 2010.

USGS 2005 — U.S. Geological Survey (USGS). 2005. "North Dakota Notes No. 4: Earthquakes in North Dakota?" Available online: <https://www.dmr.nd.gov/ndgs/ndnotes/ndn4_h.htm>. Accessed 6 April 2010.

Vanderhoff 2010 — Vanderhoff, Linda. 2010. Correspondence between Linda Vanderhoff (Grand Forks AFB) and HDR regarding installation populations. 18 February 2010.

APPENDIX A

MILITARY HOUSING PRIVATIZATION INITIATIVE

Appendix A

Military Housing Privatization Initiative

Title 10	**Armed Forces**
Subtitle A	**General Military Law**
Part IV	**Service, Supply, and Procurement**
Chapter 169	**Military Construction and Military Family Housing**
Subchapter IV	**Alternative Authority for Acquisition and Improvement of Military Housing**

Title 10 of the US Code as currently published by the US Government reflects the laws passed by Congress as of January 5, 2009.

Sec. 2871. Definitions

In this subchapter:

1. The term "ancillary supporting facilities" means facilities related to military housing units, including facilities to provide or support elementary or secondary education, child care centers, day care centers, child development centers, tot lots, community centers, housing offices, dining facilities, unit offices, and other similar facilities for the support of military housing.
2. The term "child development center" includes a facility, and the utilities to support such facility, the function of which is to support the daily care of children aged six weeks old through five years old for full-day, part-day, and hourly service.
3. The term "construction" means the construction of military housing units and ancillary supporting facilities or the improvement or rehabilitation of existing units or ancillary supporting facilities.
4. The term "contract" includes any contract, lease, or other agreement entered into under the authority of this subchapter.
5. The term "eligible entity" means any private person, corporation, firm, partnership, company, State or local government, or housing authority of a State or local government that is prepared to enter into a contract as a partner with the Secretary concerned for the construction of military housing units and ancillary supporting facilities.
6. The term "Fund" means the Department of Defense Family Housing Improvement Fund or the Department of Defense Military Unaccompanied Housing Improvement Fund established under section 2883 (a) of this title.
7. The term "military unaccompanied housing" means military housing intended to be occupied by members of the armed forces serving a tour of duty unaccompanied by dependents and transient housing intended to be occupied by members of the armed forces on temporary duty.
8. The term "United States" includes the Commonwealth of Puerto Rico.

Sec. 2872. General authority

In addition to any other authority provided under this chapter for the acquisition or construction of military family housing or military unaccompanied housing, the Secretary concerned may exercise any

authority or any combination of authorities provided under this subchapter in order to provide for the acquisition or construction by eligible entities of the following:

1. Family housing units on or near military installations within the United States and its territories and possessions.
2. Military unaccompanied housing units on or near such military installations.

Sec. 2872a. Utilities and services

(a) Authority To Furnish.— The Secretary concerned may furnish utilities and services referred to in subsection (b) in connection with any military housing acquired or constructed pursuant to the exercise of any authority or combination of authorities under this subchapter if the military housing is located on a military installation.

(b) Covered Utilities and Services.— The utilities and services that may be furnished under subsection (a) are the following:

(1) Electric power.
(2) Steam.
(3) Compressed air.
(4) Water.
(5) Sewage and garbage disposal.
(6) Natural gas.
(7) Pest control.
(8) Snow and ice removal.
(9) Mechanical refrigeration.
(10) Telecommunications service.
(11) Firefighting and fire protection services.
(12) Police protection services.

(c) Reimbursement.

(1) The Secretary concerned shall be reimbursed for any utilities or services furnished under subsection (a).

(2) The amount of any cash payment received under paragraph (1) shall be credited to the appropriation or working capital account from which the cost of furnishing the utilities or services concerned was paid. Amounts so credited to an appropriation or account shall be merged with funds in such appropriation or account, and shall be available to the same extent, and subject to the same terms and conditions, as such funds.

Sec. 2873. Direct loans and loan guarantees

(a) Direct Loans.

(1) Subject to subsection (c), the Secretary concerned may make direct loans to an eligible entity in order to provide funds to the eligible entity for the acquisition or construction of housing units that the Secretary determines are suitable for use as military family housing or as military unaccompanied housing.

(2) The Secretary concerned shall establish such terms and conditions with respect to loans made under this subsection, as the Secretary considers appropriate to protect the interests of the United States, including the period and frequency for repayment of such loans and the obligations of the obligors on such loans upon default.

(b) Loan Guarantees.

(1) Subject to subsection (c), the Secretary concerned may guarantee a loan made to an eligible entity if the proceeds of the loan are to be used by the eligible entity to acquire, or construct housing units that the Secretary determines are suitable for use as military family housing or as military unaccompanied housing.

(2) The amount of a guarantee on a loan that may be provided under paragraph (1) may not exceed the amount equal to the lesser of—

(A) the amount equal to 80 percent of the value of the project; or

(B) the amount of the outstanding principal of the loan.

(3) The Secretary concerned shall establish such terms and conditions with respect to guarantees of loans under this subsection, as the Secretary considers appropriate to protect the interests of the United States, including the rights and obligations of obligors of such loans and the rights and obligations of the United States with respect to such guarantees.

(c) Limitation on Direct Loan and Guarantee Authority.— Direct loans and loan guarantees may be made under this section only to the extent that appropriations of budget authority to cover their cost (as defined in section 502(5) of the Federal Credit Reform Act of 1990 (2 U.S.C. 661a (5))) are made in advance, or authority is otherwise provided in appropriation Acts. If such appropriation or other authority is provided, there may be established a financing account (as defined in section 502(7) of such Act (2 U.S.C. 661a (7))), which shall be available for the disbursement of direct loans or payment of claims for payment on loan guarantees under this section and for all other cash flows to and from the Government as a result of direct loans and guarantees made under this section.

Sec. 2874. Leasing of housing

(a) Lease Authorized.— The Secretary concerned may enter into contracts for the lease of housing units that the Secretary determines are suitable for use as military family housing or military unaccompanied housing.

(b) Use of Leased Units.— The Secretary concerned shall utilize housing units leased under this section as military family housing or military unaccompanied housing, as appropriate.

(c) Lease Terms.— A contract under this section may be for any period that the Secretary concerned determines appropriate and may provide for the owner of the leased property to operate and maintain the property.

Sec. 2875. Investments

(a) Investments Authorized.— The Secretary concerned may make investments in an eligible entity carrying out projects for the acquisition or construction of housing units suitable for use as military family housing or as military unaccompanied housing.

(b) Forms of Investment.— An investment under this section may take the form of an acquisition of a limited partnership interest by the United States, a purchase of stock or other equity instruments by the United States, a purchase of bonds or other debt instruments by the United States, or any combination of such forms of investment.

(c) Limitation on Value of Investment.

(1) The cash amount of an investment under this section in an eligible entity may not exceed an amount equal to 33 1/3 percent of the capital cost (as determined by the Secretary concerned) of the project or projects that the eligible entity proposes to carry out under this section with the investment.

(2) If the Secretary concerned conveys land or facilities to an eligible entity as all or part of an investment in the eligible entity under this section, the total value of the investment by the Secretary under this section may not exceed an amount equal to 45 percent of the capital cost (as determined by the Secretary) of the project or projects that the eligible entity proposes to carry out under this section with the investment.

(3) In this subsection, the term "capital cost", with respect to a project for the acquisition or construction of housing, means the total amount of the costs included in the basis of the housing for Federal income tax purposes.

(d) Collateral Incentive Agreements.— The Secretary concerned shall enter into collateral incentive agreements with eligible entities in which the Secretary makes an investment under this section to ensure that a suitable preference will be afforded members of the armed forces and their dependents in the lease or purchase, as the case may be, of a reasonable number of the housing units covered by the investment.

(e) Congressional Notification Required.— Amounts in the Department of Defense Family Housing Improvement Fund or the Department of Defense Military Unaccompanied Housing Improvement Fund may be used to make a cash investment under this section in an eligible entity only after the end of the 30-day period beginning on the date the Secretary of Defense submits written notice of, and justification for, the investment to the appropriate committees of Congress or, if earlier, the end of the 14-day period beginning on the date on which a copy of the notice and justification is provided in an electronic medium pursuant to section 480 of this title.

Sec. 2876. Rental guarantees

The Secretary concerned may enter into agreements with eligible entities that acquire or construct military family housing units or military unaccompanied housing units under this subchapter in order to assure –

(1) the occupancy of such units at levels specified in the agreements; or

(2) rental income derived from rental of such units at levels specified in the agreements.

Sec. 2877. Differential lease payments

Pursuant to an agreement entered into by the Secretary concerned and a lessor of military family housing or military unaccompanied housing to members of the armed forces, the Secretary may pay the lessor an amount in addition to the rental payments for the housing made by the members as the Secretary determines appropriate to encourage the lessor to make the housing available to members of the armed forces as military family housing or as military unaccompanied housing.

Sec. 2878. Conveyance or lease of existing property and facilities

(a) Conveyance or Lease Authorized.— The Secretary concerned may convey or lease property or facilities (including ancillary supporting facilities) to eligible entities for purposes of using the proceeds of such conveyance or lease to carry out activities under this subchapter.

(b) Inapplicability to Property at Installation Approved for Closure.— The authority of this section does not apply to property or facilities located on or near a military installation approved for closure under a base closure law.

(c) Competitive Process.— The Secretary concerned shall ensure that the time, method, and terms and conditions of the reconveyance or lease of property or facilities under this section from the eligible entity permit full and free competition consistent with the value and nature of the property or facilities involved.

(d) Terms and Conditions.

(1) The conveyance or lease of property or facilities under this section shall be for such consideration and upon such terms and conditions as the Secretary concerned considers appropriate for the purposes of this subchapter and to protect the interests of the United States.

(2) As part or all of the consideration for a conveyance or lease under this section, the purchaser or lessor (as the case may be) shall enter into an agreement with the Secretary to ensure that a suitable preference will be afforded members of the armed forces and their dependents in the lease or sublease of a reasonable number of the housing units covered by the conveyance or lease, as the case may be, or in the lease of other suitable housing units made available by the purchaser or lessee.

(e) Inapplicability of Certain Property Management Laws.— The conveyance or lease of property or facilities under this section shall not be subject to the following provisions of law:

(1) Section 2667 of this title.

(2) Subtitle I of title 40 and title III of the Federal Property and Administrative Services Act of 1949 (41 U.S.C. 251 et seq.).

(3) Section 1302 of title 40.

(4) Section 501 of the McKinney-Vento Homeless Assistance Act (42 U.S.C. 11411).

Sec. 2879.

(Repealed. Public Law 107-314, div. B, title XXVIII, Sec. 2802(c)(1), Dec. 2, 2002, 116 Stat. 2703)

Sec. 2880. Unit size and type

(a) Conformity With Similar Housing Units in Locale.— The Secretary concerned shall ensure that the room patterns and floor areas of military family housing units and military unaccompanied housing units acquired or constructed under this subchapter are generally comparable to the room patterns and floor areas of similar housing units in the locality concerned.

(b) Inapplicability of Limitations on Space by Pay Grade.— Sections 2826 and 2856 of this title shall not apply to military family housing or military unaccompanied housing units acquired or constructed under this subchapter.

Sec. 2881. Ancillary supporting facilities

(a) Authority To Acquire or Construct.— Any project for the acquisition or construction of military family housing units or military unaccompanied housing units under this subchapter may include the acquisition or construction of ancillary supporting facilities for the housing units concerned.

(b) Restriction.— A project referred to in subsection (a) may not include the acquisition or construction of an ancillary supporting facility (other than a child development center) if, as determined by the Secretary concerned, the facility is to be used for providing merchandise or services in direct competition with –

(1) the Army and Air Force Exchange Service;

(2) the Navy Exchange Service Command;

(3) a Marine Corps exchange;

(4) the Defense Commissary Agency; or

(5) any nonappropriated fund activity of the Department of Defense for the morale, welfare, and recreation of members of the armed forces.

Sec. 2881a. Pilot projects for acquisition or construction of military unaccompanied housing

(a) Pilot Projects Authorized.— The Secretary of the Navy may carry out not more than three pilot projects under the authority of this section or another provision of this subchapter to use the private sector for the acquisition or construction of military unaccompanied housing in the United States, including any territory or possession of the United States.

(b) Treatment of Housing; Assignment of Members.— The Secretary of the Navy may assign members of the armed forces without dependents to housing units acquired or constructed under the pilot projects, and such housing units shall be considered as quarters of the United States or a housing facility under the jurisdiction of the Secretary for purposes of section 403 of title 37.

(c) Basic Allowance for Housing.

(1) The Secretary of Defense may prescribe and, under section 403(n) of title 37, pay for members of the armed forces without dependents in privatized housing acquired or constructed under the pilot projects higher rates of partial basic allowance for housing than the rates authorized under paragraph (2) of such section.

(2) The partial basic allowance for housing paid for a member at a higher rate under this subsection may be paid directly to the private sector source of the housing to whom the member is obligated to pay rent or other charge for residing in such housing if the private sector source credits the amount so paid against the amount owed by the member for the rent or other charge.

(d) Funding.

(1) The Secretary of the Navy shall use the Department of Defense Military Unaccompanied Housing Improvement Fund to carry out activities under the pilot projects.

(2) Subject to 30 days prior notification to the appropriate committees of Congress, such additional amounts as the Secretary of Defense considers necessary may be transferred to the Department of Defense Military Unaccompanied Housing Improvement Fund from amounts appropriated for construction of military unaccompanied housing in military construction accounts. The amounts so transferred shall be merged with and be available for the same purposes and for the same period of time as amounts appropriated directly to the Fund.

(e) Reports.

(1) The Secretary of the Navy shall transmit to the appropriate committees of Congress a report describing –

(A) each contract for the acquisition of military unaccompanied housing that the Secretary proposes to solicit under the pilot projects;

(B) each conveyance or lease proposed under section 2878 of this title in furtherance of the pilot projects; and

(C) the proposed partial basic allowance for housing rates for each contract as they vary by grade of the member and how they compare to basic allowance for housing rates for other contracts written under the authority of the pilot programs.

(2) The report shall describe the proposed contract, conveyance, or lease and the intended method of participation of the United States in the contract, conveyance, or lease and provide a justification of such method of participation. The report shall be submitted not later than 30 days before the date on which the Secretary issues the contract solicitation or offers the conveyance or lease.

(f) Expiration.— The authority of the Secretary of the Navy to enter into a contract under the pilot programs shall expire September 30,2009.

Sec. 2882. Effect of assignment of members to housing units acquired or constructed under alternative authority

(a) Treatment as Quarters of the United States.— Except as provided in subsection (b), housing units acquired or constructed under this subchapter shall be considered as quarters of the United States or a housing facility under the jurisdiction of a uniformed service for purposes of section 403 of title 37.

(b) Availability of Basic Allowance for Housing.— A member of the armed forces who is assigned to a housing unit acquired or constructed under this subchapter that is not owned or leased by the United States shall be entitled to a basic allowance for housing under section 403 of title 37.

(c) Lease Payments Through Pay Allotments.— The Secretary concerned may require members of the armed forces who lease housing in housing units acquired or constructed under this subchapter to make lease payments for such housing pursuant to allotments of the pay of such members under section 701 of title 37.

Sec. 2883. Department of Defense Housing Funds

(a) Establishment.— There are hereby established on the books of the Treasury the following accounts:

(1) The Department of Defense Family Housing Improvement Fund.

(2) The Department of Defense Military Unaccompanied Housing Improvement Fund.

(b) Commingling of Funds Prohibited.

(3) The Secretary of Defense shall administer each Fund separately.

(4) Amounts in the Department of Defense Family Housing Improvement Fund may be used only to carry out activities under this subchapter with respect to military family housing.

(5) Amounts in the Department of Defense Military Unaccompanied Housing Improvement Fund may be used only to carry out activities under this subchapter with respect to military unaccompanied housing.

(c) Credits to Funds.

(1) There shall be credited to the Department of Defense Family Housing Improvement Fund the following:

(A) Amounts authorized for and appropriated to that Fund.

(B) Subject to subsection (f), any amounts that the Secretary of Defense transfers, in such amounts as provided in appropriation Acts, to that Fund from amounts authorized and appropriated to the Department of Defense for the acquisition, improvement, or construction of military family housing.

(C) Proceeds from the conveyance or lease of property or facilities under section 2878 of this title for the purpose of carrying out activities under this subchapter with respect to military family housing.

(D) Income derived from any activities under this subchapter with respect to military family housing, including interest on loans made under section 2873 of this title, income and gains realized from investments under section 2875 of this title, and any return of capital invested as part of such investments.

(E) Any amounts that the Secretary of the Navy transfers to that Fund pursuant to section 2814(i)(3) of this title, subject to the restrictions on the use of the transferred amounts specified in that section.

(F) Any amounts that the Secretary concerned transfers to that Fund pursuant to section 2869 of this title.

(G) Subject to subsection (f), any amounts that the Secretary of Defense transfers to that Fund from amounts in the Department of Defense Base Closure Account 2005.

(d) Use of Amounts in Funds.

(1) In such amounts as provided in appropriation Acts and except as provided in subsection (e), the Secretary of Defense may use amounts in the Department of Defense Family Housing Improvement Fund to carry out activities under this subchapter with respect to military family housing, including activities required in connection with the planning, execution, and administration of contracts entered into under the authority of this subchapter. The Secretary may also use for expenses of activities required in connection with the planning, execution, and administration of such contracts funds that are otherwise available to the Department of Defense for such types of expenses.

(2) In such amounts as provided in appropriation Acts and except as provided in subsection (e), the Secretary of Defense may use amounts in the Department of Defense Military Unaccompanied Housing Improvement Fund to carry out activities under this subchapter with respect to military unaccompanied housing, including activities required in connection with the planning, execution, and administration of contracts entered into under the authority of this subchapter. The Secretary may also use for expenses of activities required in connection with the planning, execution, and administration of such contracts funds that are otherwise available to the Department of Defense for such types of expenses.

(3) Amounts made available under this subsection shall remain available until expended. The Secretary of Defense may transfer amounts made available under this subsection to the Secretaries of the military departments to permit such Secretaries to carry out the activities for which such amounts may be used.

(e) Limitation on Obligations.

(4) The Secretary may not incur an obligation under a contract or other agreement entered into under this subchapter in excess of the unobligated balance, at the time the contract is entered into, of the Fund required to be used to satisfy the obligation.

(5) The Funds established under subsection (a) shall be the sole source of funds for activities carried out under this subchapter.

(f) Notification Required for Transfers.— A transfer of appropriated amounts to a Fund under subparagraph (B) or (G) of paragraph (1) or subparagraph (B) or (G) of paragraph (2) of subsection (c) may be made only after the end of the 30-day period beginning on the date the Secretary of Defense submits written notice of, and justification for, the transfer to the appropriate committees of Congress or, if earlier, the end of the 14-day period beginning on the date on which a copy of the notice and justification is provided in an electronic medium pursuant to section 480 of this title. In addition, the notice required in connection with a transfer under subparagraph (G) of paragraph (1) or subparagraph (G) of paragraph (2) shall include a certification that the amounts to be transferred from the Department of Defense Base Closure Account 2005 were specified in the conference report to accompany the most recent Military Construction Authorization Act.

Sec. 2883a. Funds for housing allowances of members of the armed forces assigned to certain military family housing units

(a) Authority to Transfer Funds To Cover Housing Allowances.— During the fiscal year in which a contract is awarded for the acquisition or construction of military family housing units under this subchapter that are not to be owned by the United States, the Secretary of Defense may transfer the amount determined under subsection (b) with respect to such housing from appropriations available for support of military housing for the armed force concerned for that fiscal year to appropriations available for pay and allowances of military personnel of that same armed force for that same fiscal year.

(b) Amount Transferred.— The total amount authorized to be transferred under subsection (a) in connection with a contract under this subchapter may not exceed an amount equal to any additional amounts payable during the fiscal year in which the contract is awarded to members of the armed forces assigned to the acquired or constructed housing units as basic allowance for housing under section 403 of title 37 that would not otherwise have been payable to such members if not for assignment to such housing units.

(c) Transfers Subject to Appropriations.— The transfer of funds under the authority of subsection (a) is limited to such amounts as may be provided in advance in appropriations Acts.

Sec. 2884. Reports

(a) Project Reports.

(1) The Secretary of Defense shall transmit to the appropriate committees of Congress a report describing—

(A) each contract for the acquisition or construction of family housing units or unaccompanied housing units that the Secretary proposes to solicit under this subchapter; and

(B) each conveyance or lease proposed under section 2878 of this title.

(2) For each proposed contract, conveyance, or lease described in paragraph (1), the report required by such paragraph shall include the following:

(A) A description of the contract, conveyance, or lease, including a summary of the terms of the contract, conveyance, or lease.

(B) A description of the authorities to be utilized in entering into the contract, conveyance, or lease and the intended method of participation of the United States in the contract, conveyance, or lease, including a justification of the intended method of participation.

(C) A statement of the scored cost of the contract, conveyance, or lease, as determined by the Office of Management and Budget.

(D) A statement of the United States funds required for the contract, conveyance, or lease and a description of the source of such funds, including a description of the specific construction, acquisition, or improvement projects from which funds were transferred to the Funds established under section 2883 of this title in order to finance the contract, conveyance, or lease.

(E) An economic assessment of the life cycle costs of the contract, conveyance, or lease, including an estimate of the amount of United States funds that would be paid over the life of the contract, conveyance, or lease from amounts derived from payments of government allowances, including the basic allowance for housing under section 403 of title 37, if the housing affected by the project were fully occupied by military personnel over the life of the contract, conveyance, or lease.

(3)

(A) In the case of a contract described in paragraph (1) proposed to be entered into with a private party, the report shall specify whether the contract will or may include a guarantee (including the making of mortgage or rental payments) by the Secretary to the private party in the event of—

(i) the closure or realignment of the installation for which housing will be provided under the contract;
(ii) a reduction in force of units stationed at such installation; or
(iii) the extended deployment of units stationed at such installation.

(B) If the contract will or may include such a guarantee, the report shall also—

(i) describe the nature of the guarantee; and
(ii) assess the extent and likelihood, if any, of the liability of the United States with respect to the guarantee.

(4) The report shall be submitted not later than 30 days before the date on which the Secretary issues the contract solicitation or offers the conveyance or lease.

(b) Annual Reports.— The Secretary of Defense shall include each year in the materials that the Secretary submits to Congress in support of the budget submitted by the President pursuant to section 1105 of title 31 the following:

(1) A separate report on the expenditures and receipts during the preceding fiscal year covering each of the Funds established under section 2883 of this title, including a description of the specific construction, acquisition, or improvement projects from which funds were transferred and the privatization projects or contracts to which those funds were transferred. Each report shall also include, for each military department or defense agency, a description of all funds to be transferred to such Funds for the current fiscal year and the next fiscal year.

(2) A methodology for evaluating the extent and effectiveness of the use of the authorities under this subchapter during such preceding fiscal year, and such recommendations as the Secretary considers necessary for improving the extent and effectiveness of the use of such authorities in the future.

(3) A review of activities of the Secretary under this subchapter during such preceding fiscal year, shown for military family housing, military unaccompanied housing, dual military family housing and military unaccompanied housing, and ancillary supporting facilities.

(4) If a contract for the acquisition or construction of military family housing, military unaccompanied housing, or dual military family housing and military unaccompanied housing entered into during the preceding fiscal year did not include the acquisition or construction of the types of ancillary supporting facilities specifically referred to in section 2871 (1) of this title, a explanation of the reasons why such ancillary supporting facilities were not included.

(5) A report setting forth, by armed force—

(A) an estimate of the amounts of basic allowance for housing under section 403 of title 37 that will be paid, during the current fiscal year and the fiscal year for which the budget is submitted, to members of the armed forces living in housing provided under the authorities in this subchapter; and

(B) the number of units of military family housing and military unaccompanied housing upon which the estimate under subparagraph (A) for the current fiscal year and the next fiscal year is based.

(6) A description of the Secretary's plans for housing privatization activities under this subchapter:

(A) during the fiscal year for which the budget is submitted; and

(B) during the period covered by the then-current future-years defense plan under section 221 of this title.

(7) A report on best practices for the execution of housing privatization initiatives, including—

(A) effective means to track and verify proper performance, schedule, and cash flow;

(B) means of overseeing the actions of bondholders to properly monitor construction progress and construction draws;

(C) effective structuring of transactions to ensure the United States Government has adequate abilities to oversee project owner performance;

(D) ensuring that notices to proceed on new work are not issued until proper bonding is in place; and

(E) such other topics that are identified as pertinent by the Department of Defense.

(8) A report identifying each family housing unit acquired or constructed under this subchapter that is used, or intended to be used, as quarters for a general officer or flag officer and for which the total operation, maintenance, and repair costs for the unit exceeded $50,000. For each housing unit so identified, the report shall also include the total of such operation, maintenance, and repair costs.

Sec. 2885. Oversight and accountability for privatization projects

(a) Oversight and Accountability Measures.— Each Secretary concerned shall prescribe regulations to effectively oversee and manage military housing privatization projects carried out under this subchapter. The regulations shall include the following requirements for each privatization project:

(1) The installation asset manager shall conduct monthly site visits and provide quarterly reports on the progress of the construction or renovation of the housing units. The reports shall be submitted quarterly to the assistant secretary for installations and environment of the respective military department.

(2) The installation asset manager, and, as applicable, the resident construction manager, privatization asset manager, bondholder representative, project owner, developer, general contractor, and construction consultant for the project shall conduct meetings to ensure that the construction or renovation of the units meets performance and schedule requirements and that appropriate operating and ground lease agreements are in place and adhered to.

(3) If a project is 90 days or more behind schedule or otherwise appears to be substantially failing to adhere to the obligations or milestones under the contract, the assistant secretary for installations and environment of the respective military department shall submit a notice of deficiency to the Deputy Under Secretary of Defense (Installations and Environment), the Secretary concerned, the managing member, and the trustee for the project.

(4)

(A) Not later than 15 days after the submittal of a notice of deficiency under paragraph (3), the Secretary concerned or designated representative shall submit to the project owner, developer, or general contractor responsible for the project a summary of deficiencies related to the project.

(B) If the project owner, developer, or general contractor responsible for the privatization project is unable, within 60 days after receiving a notice of deficiency under subparagraph (A), to make progress on the issues outlined in such notice, the Secretary concerned shall notify the congressional defense committees of the status of the project, and shall provide a recommended course of action to correct the problems.

(b) Required Qualifications.— The Secretary concerned or designated representative shall ensure that the project owner, developer, or general contractor that is selected for each military housing privatization initiative project has construction experience commensurate with that required to complete the project.

(c) Bonding Levels.— The Secretary concerned shall ensure that the project owner, developer, or general contractor responsible for a military housing privatization initiative project has sufficient payment and performance bonds or suitable instruments in place for each phase of a construction or renovation portion of the project to ensure successful completion of the work in amounts as agreed to in the project's legal documents, but in no case less than 50 percent of the total value of the active phases of the project, prior to the commencement of work for that phase.

(d) Reporting of Efforts To Select Successor in Event of Default.— In the event a military housing privatization initiative project enters into default, the assistant secretary for installations and environment of the respective military department shall submit a report to the congressional defense committees every 90 days detailing the status of negotiations to award the project to a new project owner, developer, or general contractor.

(e) Effect of Notices of Deficiency on Contractors and Affiliated Entities.

(1) The Secretary concerned shall keep a record of all plans of action or notices of deficiency issued to a project owner, developer, or general contractor under subsection (a)(4), including the identity of each parent, subsidiary, affiliate, or other controlling entity of such owner, developer, or contractor.

(2) Each military department shall consult all records maintained under paragraph (1) when reviewing the past performance of owners, developers, and contractors in the bidding process for a contract or other agreement for a military housing privatization initiative project.

APPENDIX B

APPLICABLE LAWS, REGULATIONS, POLICIES, AND PLANNING CRITERIA

Appendix B

Applicable Laws, Regulations, Policies, and Planning Criteria

When considering the affected environment, the various physical, biological, economic, and social environmental factors must be considered. In addition to the National Environmental Policy Act (NEPA), there are other environmental laws and Executive Orders (EOs) to be considered when preparing environmental analyses. These laws are summarized below.

NOTE: This is not a complete list of all applicable laws, regulations, policies, and planning criteria potentially applicable to documents, however, it does provide a general summary for use as a reference.

Airspace Management

Airspace management procedures assist in preventing potential conflicts or accidents associated with aircraft using designated airspace in the United States, including restricted military airspace. Airspace management involves the coordination, integration, and regulation of the use of airspace. The Federal Aviation Administration (FAA) has overall responsibility for managing airspace through a system of flight rules and regulations, airspace management actions, and air traffic control (ATC) procedures. All military and civilian aircraft are subject to Federal Aviation Regulations (FARs). The FAA's *Aeronautical Informational Manual* defines the operational requirements for each of the various types or classes of military and civilian airspace.

Some military services have specific guidance for airspace management. For example, airspace management in the U.S. Air Force (USAF) is guided by Air Force Instruction (AFI) 13-201, *Air Force Airspace Management*. This AFI provides guidance and procedures for developing and processing special use airspace (SUA). It covers aeronautical matters governing the efficient planning, acquisition, use, and management of airspace required to support USAF flight operations. It applies to activities that have operational or administrative responsibility for using airspace, establishes practices to decrease disturbances from flight operations that might cause adverse public reaction, and provides flying unit commanders with general guidance for dealing with local problems. The U.S. Army, per Army Regulation (AR) 95-2, *Airspace, Airfields/Heliport, Flight Activities, Air Traffic Control and Navigational Aids,* provides similar guidance and procedures for U.S. Army airspace operations.

Noise

Federal and local governments have established noise guidelines and regulations for the purpose of protecting citizens from potential hearing damage and from various other adverse physiological, psychological, and social effects associated with noise. The U.S. Department of Housing and Urban Development (HUD), in coordination with the Department of Defense (DOD) and the FAA, has established criteria for acceptable noise levels for aircraft operations relative to various types of land use.

The U.S. Army, through AR 200-1, *Environmental Protection and Enhancement*, implements Federal laws concerning environmental noise form U.S. Army activities. The USAF's Air Installation Compatible Use Zone (AICUZ) Program, (AFI 32-7063), provides guidance to air bases and local communities in planning land uses compatible with airfield operations. The AICUZ program describes existing aircraft noise and flight safety zones on and near USAF installations.

Land Use

The term "land use" refers to real property classifications that indicate either natural conditions or the types of human activities occurring on a defined parcel of land. In many cases, land use descriptions are codified in local zoning laws. However, there is no nationally recognized convention or uniform terminology for describing land use categories.

Land use planning in the USAF is guided by *Land Use Planning Bulletin, Base Comprehensive Planning* (HQ USAF/LEEVX, August 1, 1986). This document provides for the use of 12 basic land use types found on a USAF installation. In addition, land use guidelines established by the HUD and based on findings of the Federal Interagency Committee on Noise (FICON) are used to recommend acceptable levels of noise exposure for land use. The U.S. Army uses the 12 land use types for installation land use planning, and these land use types roughly parallel those employed by municipalities in the civilian sector.

Air Quality

The Clean Air Act (CAA) of 1970, and Amendments of 1977 and 1990, recognizes that increases in air pollution result in danger to public health and welfare. To protect and enhance the quality of the Nation's air resources, the CAA authorizes the U.S. Environmental Protection Agency (USEPA) to set six National Ambient Air Quality Standards (NAAQS) which regulate carbon monoxide, lead, nitrogen dioxide, ozone, sulfur dioxide, and particulate matter pollution emissions. The CAA seeks to reduce or eliminate the creation of pollutants at their source, and designates this responsibility to state and local governments. States are directed to utilize financial and technical assistance and leadership from the Federal government to develop implementation plans to achieve NAAQS. Geographic areas are officially designated by the USEPA as being in attainment or nonattainment for pollutants in relation to their compliance with NAAQS. Geographic regions established for air quality planning purposes are designated as Air Quality Control Regions (AQCRs). Pollutant concentration levels are measured at designated monitoring stations within the AQCR. An area with insufficient monitoring data is designated as unclassified. Section 309 of the CAA authorizes USEPA to review and comment on impact statements prepared by other agencies.

An agency should consider what effect an action might have on NAAQS due to short-term increases in air pollution during construction and long-term increases resulting from changes in traffic patterns. For actions in attainment areas, a Federal agency could also be subject to USEPA's Prevention of Significant Deterioration (PSD) regulations. These regulations apply to new major stationary sources and modifications to such sources. Although few agency facilities will actually emit pollutants, increases in pollution can result from a change in traffic patterns or volume. Section 118 of the CAA waives Federal immunity from complying with the CAA and states all Federal agencies will comply with all Federal- and state-approved requirements.

The General Conformity Rule requires that any Federal action meet the requirements of a State Implementation Plan (SIP) or Federal Implementation Plan. More specifically, CAA conformity is ensured when a Federal action does not cause a new violation of the NAAQS; contribute to an increase in the frequency or severity of violations of NAAQS; or delay the timely attainment of any NAAQS, interim progress milestones, or other milestones toward achieving compliance with the NAAQS.

The General Conformity Rule applies only to actions in nonattainment or maintenance areas and considers both direct and indirect emissions. The rule applies only to Federal actions that are considered "regionally significant" or where the total emissions from the action meet or exceed the *de minimis* thresholds presented in 40 CFR 93.153. An action is regionally significant when the total nonattainment

pollutant emissions exceed 10 percent of the AQCR's total emissions inventory for that nonattainment pollutant. If a Federal action does not meet or exceed the *de minimis* thresholds and is not considered regionally significant, then a full Conformity Determination is not required.

Health and Safety

Human health and safety relates to workers' health and safety during demolition or construction of facilities, or applies to work conditions during operations of a facility that could expose workers to conditions that pose a health or safety risk. The Federal Occupational Safety and Health Administration (OSHA) issues standards to protect persons from such risks, and the DOD and state and local jurisdictions issue guidance to comply with these OSHA standards. Safety also can refer to safe operations of aircraft or other equipment.

AFI 91-301, *Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH) Program,* implements Air Force Policy Directive (AFPD) 91-3, *Occupational Safety and Health,* by outlining the AFOSH Program. The purpose of the AFOSH Program is to minimize loss of USAF resources and to protect USAF personnel from occupational deaths, injuries, or illnesses by managing risks. In conjunction with the USAF Mishap Prevention Program, these standards ensure all USAF workplaces meet Federal safety and health requirements.

AFI 91-202, *USAF Mishap Prevention Program*, implements AFPD 91-2, *Safety Programs*. It establishes mishap prevention program requirements (including the Bird/Wildlife Aircraft Strike Hazard [BASH] Program), assigns responsibilities for program elements, and contains program management information.

U.S. Army regulations in AR 385-10, *Army Safety Program*, prescribe policy, responsibilities, and procedures to protect and preserve U.S. Army personnel and property from accidental loss or injury. AR 40-5, *Preventive Medicine*, provides for the promotion of health and the prevention of disease and injury.

Geological Resources

Recognizing that millions of acres per year of prime farmland are lost to development, Congress passed the Farmland Protection Policy Act to minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland (7 Code of Federal Regulations [CFR] Part 658). Prime farmland is described as soils that have a combination of soil and landscape properties that make them highly suitable for cropland, such as high inherent fertility, good water-holding capacity, and deep or thick effective rooting zones, and that are not subject to periodic flooding. Under the Farmland Protection Policy Act, agencies are encouraged to conserve prime or unique farmlands when alternatives are practicable. Some activities that are not subject to the Farmland Protection Policy Act include Federal permitting and licensing, projects on land already in urban development or used for water storage, construction for national defense purposes, or construction of new minor secondary structures such as a garage or storage shed.

Water Resources

The Clean Water Act (CWA) of 1977 is an amendment to the Federal Water Pollution Control Act of 1972, is administered by USEPA, and sets the basic structure for regulating discharges of pollutants into U.S. waters. The CWA requires USEPA to establish water quality standards for specified contaminants in surface waters and forbids the discharge of pollutants from a point source into navigable waters without a National Pollutant Discharge Elimination System (NPDES) permit. NPDES permits are issued by

USEPA or the appropriate state if it has assumed responsibility. Section 404 of the CWA establishes a Federal program to regulate the discharge of dredge and fill material into waters of the United States. Section 404 permits are issued by the U.S. Army Corps of Engineers (USACE). Waters of the United States include interstate and intrastate lakes, rivers, streams, and wetlands that are used for commerce, recreation, industry, sources of fish, and other purposes. The objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Each agency should consider the impact on water quality from actions such as the discharge of dredge or fill material into U.S. waters from construction, or the discharge of pollutants as a result of facility occupation.

Section 303(d) of the CWA requires states and USEPA to identify waters not meeting state water quality standards and to develop Total Maximum Daily Loads (TMDLs). A TMDL is the maximum amount of a pollutant that a waterbody can receive and still be in compliance with state water quality standards. After determining TMDLs for impaired waters, states are required to identify all point and nonpoint sources of pollution in a watershed that are contributing to the impairment and to develop an implementation plan that will allocate reductions to each source to meet the state standards. The TMDL program is currently the Nation's most comprehensive attempt to restore and improve water quality. The TMDL program does not explicitly require the protection of riparian areas. However, implementation of the TMDL plans typically calls for restoration of riparian areas as one of the required management measures for achieving reductions in nonpoint source pollutant loadings.

The USEPA issued a Final Rule for the CWA concerning technology-based Effluent Limitations Guidelines and New Source Performance Standards for the Construction and Development point source category. All NPDES storm water permits issued by the USEPA or states must incorporate requirements established in the Final Rule. As of February 1, 2010, all new construction sites are required to meet the non-numeric effluent limitations and design, install, and maintain effective erosion and sedimentation controls. In addition, construction site owners and operators that disturb 1 or more acres of land are required to use best management practices (BMPs) to ensure that soil disturbed during construction activities does not pollute nearby water bodies. Effective August 1, 2011, construction activities disturbing 20 or more acres must comply with the numeric effluent limitation for turbidity in addition to the non-numeric effluent limitations. The maximum daily turbidity limitation is 280 nephelometric turbidity units (ntu). On February 2, 2014, construction site owners and operators that disturb 10 or more acres of land are required to monitor discharges to ensure compliance with effluent limitations as specified by the permitting authority. Construction site owners are encouraged to phase ground-disturbing activities to limit the applicability of the monitoring requirements and the turbidity limitation. The USEPA's limitations are based on its assessment of what specific technologies can reliably achieve. Permittees can select management practices or technologies that are best suited for site-specific conditions.

The Safe Drinking Water Act (SDWA) of 1974 establishes a Federal program to monitor and increase the safety of all commercially and publicly supplied drinking water. Congress amended the SDWA in 1986, mandating dramatic changes in nationwide safeguards for drinking water and establishing new Federal enforcement responsibility on the part of USEPA. The 1986 amendments to the SDWA require USEPA to establish Maximum Contaminant Levels (MCLs), Maximum Contaminant Level Goals (MCLGs), and Best Available Technology (BAT) treatment techniques for organic, inorganic, radioactive, and microbial contaminants; and turbidity. MCLGs are maximum concentrations below which no negative human health effects are known to exist. The 1996 amendments set current Federal MCLs, MCLGs, and BATs for organic, inorganic, microbiological, and radiological contaminants in public drinking water supplies.

The Wild and Scenic Rivers Act of 1968 provides for a wild and scenic river system by recognizing the remarkable values of specific rivers of the Nation. These selected rivers and their immediate environment are preserved in a free-flowing condition, without dams or other construction. The policy not only

protects the water quality of the selected rivers but also provides for the enjoyment of present and future generations. Any river in a free-flowing condition is eligible for inclusion, and can be authorized as such by an Act of Congress, an act of state legislature, or by the Secretary of the Interior upon the recommendation of the governor of the state(s) through which the river flows.

EO 11988, *Floodplain Management* (May 24, 1977), directs agencies to consider alternatives to avoid adverse effects and incompatible development in floodplains. An agency may locate a facility in a floodplain if the head of the agency finds there is no practicable alternative. If it is found there is no practicable alternative, the agency must minimize potential harm to the floodplain, and circulate a notice explaining why the action is to be located in the floodplain prior to taking action. Finally, new construction in a floodplain must apply accepted floodproofing and flood protection to include elevating structures above the base flood level rather than filling in land.

EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance* (October 5, 2009), directed the USEPA to issue guidance on Section 438 of the Energy Independence and Security Act (EISA). The EISA establishes into law new storm water design requirements for Federal construction projects that disturb a footprint of greater than 5,000 square feet of land. Under these requirements, predevelopment site hydrology must be maintained or restored to the maximum extent technically feasible with respect to temperature, rate, volume, and duration of flow. Predevelopment hydrology would be calculated and site design would incorporate storm water retention and reuse technologies to the maximum extent technically feasible. Post-construction analyses will be conducted to evaluate the effectiveness of the as-built storm water reduction features. These regulations are applicable to DOD Unified Facilities Criteria. Additional guidance is provided in the USEPA's *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act*.

Biological Resources

The Endangered Species Act (ESA) of 1973 establishes a Federal program to conserve, protect, and restore threatened and endangered plants and animals and their habitats. The ESA specifically charges Federal agencies with the responsibility of using their authority to conserve threatened and endangered species. All Federal agencies must ensure any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of an endangered or threatened species or result in the destruction of critical habitat for these species, unless the agency has been granted an exemption. The Secretary of the Interior, using the best available scientific data, determines which species are officially endangered or threatened, and the U.S. Fish and Wildlife Service (USFWS) maintains the list. A list of Federal endangered species can be obtained from the Endangered Species Division, USFWS (703-358-2171). States might also have their own lists of threatened and endangered species which can be obtained by calling the appropriate State Fish and Wildlife office. Some species also have laws specifically for their protection (e.g., Bald Eagle Protection Act).

The Migratory Bird Treaty Act (MBTA) of 1918, as amended, implements treaties and conventions between the United States, Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Unless otherwise permitted by regulations, the MBTA makes it unlawful to pursue, hunt, take, capture, or kill; attempt to take, capture, or kill; possess; offer to or sell, barter, purchase, or deliver; or cause to be shipped, exported, imported, transported, carried, or received any migratory bird, part, nest, egg, or product, manufactured or not. The MBTA also makes it unlawful to ship, transport, or carry from one state, territory, or district to another; or through a foreign country, any bird, part, nest, or egg that was captured, killed, taken, shipped, transported, or carried contrary to the laws from where it was obtained; and import from Canada any bird, part, nest, or egg obtained contrary to the laws of the

province from which it was obtained. The U.S. Department of the Interior has authority to arrest, with or without a warrant, a person violating the MBTA.

The Sikes Act (16 U.S.C. 670a-670o, 74 Stat. 1052), as amended, P.L. 86-797, approved September 15, 1960, provides for cooperation by the Departments of the Interior and Defense with state agencies in planning, development, and maintenance of fish and wildlife resources on military reservations throughout the United States. In November 1997, the Sikes Act was amended via the Sikes Act Improvement Amendment (Public Law 105-85, Division B, Title XXIX) to require the Secretary of Defense to carry out a program to provide for the conservation and rehabilitation of natural resources on military installations. To facilitate this program, the amendments require the Secretaries of the military departments to prepare and implement Integrated Natural Resources Management Plans (INRMPs) for each military installation in the United States unless the absence of significant natural resources on a particular installation makes preparation of a plan for the installation inappropriate.

EO 11514, *Protection and Enhancement of Environmental Quality* (March 5, 1970), states that the President, with assistance from the Council on Environmental Quality (CEQ), will lead a national effort to provide leadership in protecting and enhancing the environment for the purpose of sustaining and enriching human life. Federal agencies are directed to meet national environmental goals through their policies, programs, and plans. Agencies should also continually monitor and evaluate their activities to protect and enhance the quality of the environment. Consistent with NEPA, agencies are directed to share information about existing or potential environmental problems with all interested parties, including the public, in order to obtain their views.

EO 11990, *Protection of Wetlands* (May 24, 1977), directs agencies to consider alternatives to avoid adverse effects and incompatible development in wetlands. Federal agencies are to avoid new construction in wetlands, unless the agency finds there is no practicable alternative to construction in the wetland, and the proposed construction incorporates all possible measures to limit harm to the wetland. Agencies should use economic and environmental data, agency mission statements, and any other pertinent information when deciding whether or not to build in wetlands. EO 11990 directs each agency to provide for early public review of plans for construction in wetlands.

EO 13186, *Conservation of Migratory Birds* (January 10, 2001), creates a more comprehensive strategy for the conservation of migratory birds by the Federal government. EO 13186 provides a specific framework for the Federal government's compliance with its treaty obligations to Canada, Mexico, Russia, and Japan. EO 13186 provides broad guidelines on conservation responsibilities and requires the development of more detailed guidance in a Memorandum of Understanding (MOU). EO 13186 will be coordinated and implemented by the USFWS. The MOU will outline how Federal agencies will promote conservation of migratory birds. EO 13186 requires the support of various conservation planning efforts already in progress; incorporation of bird conservation considerations into agency planning, including NEPA analyses; and reporting annually on the level of take of migratory birds. The Federal Noxious Weed Act (Public Law 93-629) of 1975, as amended in 1990, established a Federal program to control the spread of noxious weeds. The Secretary of Agriculture was given the authority to designate plants as noxious weeds by regulation and the movement of such weeds in interstate or foreign commerce was prohibited except under permit. The Secretary was also given authority to inspect, seize, and destroy products and quarantine areas, if necessary, to prevent the spread of such weeds. The Secretary was also authorized to cooperate with Federal, state, and local agencies; farmer associations, and private individuals in measures to control, eradicate, prevent, or retard the spread of noxious weeds. This law also requires that any environmental assessments or impact statements that are required to implement plant control agreements must be completed within 1 year of the time the need for the document is established.

EO 13112, *Invasive Species* (February 3, 1999), provides direction to use relevant programs and authorities to prevent introduction of invasive species, detect and respond rapidly to control populations of invasive species, monitor invasive species populations, provide restoration of native species and habitat conditions in ecosystems that have been invaded, conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species, and promote public education on invasive species with means to address them. EO 13112 was created to minimize the economic, ecological, and human health impacts that invasive species cause.

Cultural Resources

The American Indian Religious Freedom Act of 1978 and Amendments of 1994 recognize that freedom of religion for all people is an inherent right, and traditional American Indian religions are an indispensable and irreplaceable part of Indian life. It also recognized the lack of Federal policy on this issue and made it the policy of the United States to protect and preserve the inherent right of religious freedom for Native Americans. The 1994 Amendments provide clear legal protection for the religious use of peyote cactus as a religious sacrament. Federal agencies are responsible for evaluating their actions and policies to determine if changes should be made to protect and preserve the religious cultural rights and practices of Native Americans. These evaluations must be made in consultation with native traditional religious leaders.

The Archaeological Resource Protection Act (ARPA) of 1979 protects archaeological resources on public and American Indian lands. It provides felony-level penalties for the unauthorized excavation, removal, damage, alteration, or defacement of any archaeological resource, defined as material remains of past human life or activities which are at least 100 years old. Before archaeological resources are excavated or removed from public lands, the Federal land manager must issue a permit detailing the time, scope, location, and specific purpose of the proposed work. ARPA also fosters the exchange of information about archaeological resources between governmental agencies, the professional archaeological community, and private individuals. ARPA is implemented by regulations found in 43 CFR Part 7.

The National Historic Preservation Act (NHPA) of 1966 sets forth national policy to identify and preserve properties of state, local, and national significance. The NHPA establishes the Advisory Council on Historic Preservation (ACHP), State Historic Preservation Officers (SHPOs), and the National Register of Historic Places (NRHP). The ACHP advises the President, Congress, and Federal agencies on historic preservation issues. Section 106 of the NHPA directs Federal agencies to take into account effects of their undertakings (actions and authorizations) on properties included in or eligible for the NRHP. Section 110 sets inventory, nomination, protection, and preservation responsibilities for federally owned cultural properties. Section 106 of the act is implemented by regulations of the ACHP, 36 CFR Part 800. Agencies should coordinate studies and documents prepared under Section 106 with NEPA where appropriate. However, NEPA and NHPA are separate statutes and compliance with one does not constitute compliance with the other. For example, actions which qualify for a categorical exclusion under NEPA might still require Section 106 review under NHPA. It is the responsibility of the agency official to identify properties in the area of potential effects, and whether they are included or eligible for inclusion in the NRHP. Section 110 of the NHPA requires Federal agencies to identify, evaluate, and nominate historic property under agency control to the NRHP.

The Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 establishes rights of American Indian tribes to claim ownership of certain "cultural items," defined as Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony, held or controlled by Federal agencies. Cultural items discovered on Federal or tribal lands are, in order of primacy, the property of lineal descendants, if these can be determined, and then the tribe owning the land where the items were discovered or the tribe with the closest cultural affiliation with the items. Discoveries of cultural items on

Federal or tribal land must be reported to the appropriate American Indian tribe and the Federal agency with jurisdiction over the land. If the discovery is made as a result of a land use, activity in the area must stop and the items must be protected pending the outcome of consultation with the affiliated tribe.

EO 11593, *Protection and Enhancement of the Cultural Environment* (May 13, 1971), directs the Federal government to provide leadership in the preservation, restoration, and maintenance of the historic and cultural environment. Federal agencies are required to locate and evaluate all Federal sites under their jurisdiction or control which might qualify for listing on the NRHP. Agencies must allow the ACHP to comment on the alteration, demolition, sale, or transfer of property which is likely to meet the criteria for listing as determined by the Secretary of the Interior in consultation with the SHPO. Agencies must also initiate procedures to maintain federally owned sites listed on the NRHP.

EO 13007, *Indian Sacred Sites* (May 24, 1996), provides that agencies managing Federal lands, to the extent practicable, permitted by law, and not inconsistent with agency functions, shall accommodate American Indian religious practitioners' access to and ceremonial use of American Indian sacred sites, shall avoid adversely affecting the physical integrity of such sites, and shall maintain the confidentiality of such sites. Federal agencies are responsible for informing tribes of proposed actions that could restrict future access to or ceremonial use of, or adversely affect the physical integrity of, sacred sites.

EO 13175, *Consultation and Coordination with Indian Tribal Governments* (November 6, 2000), was issued to provide for regular and meaningful consultation and collaboration with Native American tribal officials in the development of Federal policies that have tribal implications, and to strengthen the United States government-to-government relationships with Native American tribes. EO 13175 recognizes the following fundamental principles: Native American tribes exercise inherent sovereignty over their lands and members, the United States government has a unique trust relationship with Native American tribes, and deals with them on a government-to-government basis, and Native American tribes have the right to self-government and self-determination.

EO 13287, *Preserve America* (March 3, 2003), orders Federal agencies to take a leadership role in protection, enhancement, and contemporary use of historic properties owned by the Federal government, and promote intergovernmental cooperation and partnerships for preservation and use of historic properties. EO 13287 established new accountability for agencies with respect to inventories and stewardship.

Socioeconomics and Environmental Justice

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (February 11, 1994), directs Federal agencies to make achieving environmental justice part of their mission. Agencies must identify and address the adverse human health or environmental effects that its activities have on minority and low-income populations, and develop agencywide environmental justice strategies. The strategy must list "programs, policies, planning and public participation processes, enforcement, and/or rulemakings related to human health or the environment that should be revised to promote enforcement of all health and environmental statutes in areas with minority populations and low-income populations, ensure greater public participation, improve research and data collection relating to the health of and environment of minority populations and low-income populations, and identify differential patterns of consumption of natural resources among minority populations and low-income populations." A copy of the strategy and progress reports must be provided to the Federal Working Group on Environmental Justice. Responsibility for compliance with EO 12898 is with each Federal agency.

Hazardous Materials and Waste

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 authorizes USEPA to respond to spills and other releases of hazardous substances to the environment, and authorizes the National Oil and Hazardous Substances Pollution Contingency Plan. CERCLA also provides a Federal "Superfund" to respond to emergencies immediately. Although the "Superfund" provides funds for cleanup of sites where potentially responsible parties cannot be identified, USEPA is authorized to recover funds through damages collected from responsible parties. This funding process places the economic burden for cleanup on polluters.

The Pollution Prevention Act (PPA) of 1990 encourages manufacturers to avoid the generation of pollution by modifying equipment and processes; redesigning products; substituting raw materials; and making improvements in management techniques, training, and inventory control. Consistent with pollution prevention principles, EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management* (January 24, 2007 [revoking EO 13148]), sets a goal for all Federal agencies to promote environmental practices, including acquisition of biobased, environmentally preferable, energy-efficient, water-efficient, and recycled-content products; and use of paper of at least 30 percent post-consumer fiber content. In addition, EO 13423 sets a goal that requires Federal agencies to ensure that they reduce the quantity of toxic and hazardous chemicals and materials acquired, used, or disposed of; increase diversion of solid waste, as appropriate; and maintain cost-effective waste prevention and recycling programs at their facilities. Additionally, in *Federal Register* Volume 58 Number 18 (January 29, 1993), CEQ provides guidance to Federal agencies on how to "incorporate pollution prevention principles, techniques, and mechanisms into their planning and decisionmaking processes and to evaluate and report those efforts, as appropriate, in documents pursuant to NEPA."

The Resource Conservation and Recovery Act (RCRA) of 1976 is an amendment to the Solid Waste Disposal Act. RCRA authorizes USEPA to provide for "cradle-to-grave" management of hazardous waste and sets a framework for the management of nonhazardous municipal solid waste. Under RCRA, hazardous waste is controlled from generation to disposal through tracking and permitting systems, and restrictions and controls on the placement of waste on or into the land. Under RCRA, a waste is defined as hazardous if it is ignitable, corrosive, reactive, toxic, or listed by USEPA as being hazardous. With the Hazardous and Solid Waste Amendments (HSWA) of 1984, Congress targeted stricter standards for waste disposal and encouraged pollution prevention by prohibiting the land disposal of particular wastes. The HSWA amendments strengthen control of both hazardous and nonhazardous waste and emphasize the prevention of pollution of groundwater.

The Superfund Amendments and Reauthorization Act (SARA) of 1986 mandates strong clean-up standards and authorizes USEPA to use a variety of incentives to encourage settlements. Title III of SARA authorizes the Emergency Planning and Community Right to Know Act (EPCRA), which requires facility operators with "hazardous substances" or "extremely hazardous substances" to prepare comprehensive emergency plans and to report accidental releases. If a Federal agency acquires a contaminated site, it can be held liable for cleanup as the property owner/operator. A Federal agency can also incur liability if it leases a property, as the courts have found lessees liable as "owners." However, if the agency exercises due diligence by conducting a Phase I Environmental Site Assessment, it can claim the "innocent purchaser" defense under CERCLA. According to Title 42 United States Code (U.S.C.) 9601(35), the current owner/operator must show it undertook "all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice" before buying the property to use this defense.

The Toxic Substance Control Act (TSCA) of 1976 consists of four titles. Title I established requirements and authorities to identify and control toxic chemical hazards to human health and the environment.

TSCA authorized USEPA to gather information on chemical risks, require companies to test chemicals for toxic effects, and regulate chemicals with unreasonable risk. TSCA also singled out polychlorinated biphenyls (PCBs) for regulation, and, as a result, PCBs are being phased out. PCBs are persistent when released into the environment and accumulate in the tissues of living organisms. They have been shown to cause adverse health effects on laboratory animals and could cause adverse health effects in humans. TSCA and its regulations govern the manufacture, processing, distribution, use, marking, storage, disposal, clean-up, and release reporting requirements for numerous chemicals like PCBs. TSCA Title II provides statutory framework for "Asbestos Hazard Emergency Response," which applies only to schools. TSCA Title III, "Indoor Radon Abatement," states indoor air in buildings of the United States should be as free of radon as the outside ambient air. Federal agencies are required to conduct studies on the extent of radon contamination in buildings they own. TSCA Title IV, "Lead Exposure Reduction," directs Federal agencies to "conduct a comprehensive program to promote safe, effective, and affordable monitoring, detection, and abatement of lead-based paint and other lead exposure hazards." Further, any Federal agency having jurisdiction over a property or facility must comply with all Federal, state, interstate, and local requirements concerning lead-based paint.

Energy

EO 13514, *Federal Leadership In Environmental, Energy, And Economic Performance*, dated October 5, 2009, directs Federal agencies to improve water use efficiency and management; implement high performance sustainable Federal building design, construction, operation and management; and advance regional and local integrated planning by identifying and analyzing impacts from energy usage and alternative energy sources. EO 13514 also directs Federal agencies to prepare and implement a Strategic Sustainability Performance Plan to manage its greenhouse gas emissions, water use, pollution prevention, regional development, and transportation planning, sustainable building design and promote sustainability in its acquisition of goods and services. Section 2(g) requires new construction, major renovation, or repair and alteration of buildings to comply with the *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings*. The CEQ regulations at 40 CFR 1502.16(e) directs agencies to consider the energy requirements and conservation potential of various alternatives and mitigation measures.

Section 503(b) of Executive Order 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, instructs Federal agencies to conduct their environmental, transportation, and energy-related activities under the law in support of their respective missions in an environmentally, economically, and fiscally sound, integrated, continuously improving, efficient, and sustainable manner. EO 13423 sets goals in energy efficiency, acquisition, renewable energy, toxic chemical reduction, recycling, sustainable buildings, electronics stewardship, fleets, and water conservation. Sustainable design measures such as the use of "green" technology (e.g., photovoltaic panels, solar collection, heat recovery systems, wind turbines, green roofs, and habitat-oriented storm water management) would be incorporated where practicable.

APPENDIX C

INTERAGENCY AND INTERGOVERNMENTAL COORDINATION FOR ENVIRONMENTAL PLANNING, NATIVE AMERICAN TRIBAL CONSULTATION, AND PUBLIC INVOLVEMENT CORRESPONDENCE

Interagency and Intergovernmental Coordination for Environmental Planning Distribution List

The Draft EA and FONSI were made available to the agencies listed below for a 30-day review period. A copy of the IICEP letter and comments received are included below.

Office of Senator Kent Conrad
530 Hart Senate Office Building
United States Senate
Washington, D.C. 20510-3403

Office of Senator John Hoeven
G11 Dirksen Senate Office Building
United States Senate
Washington, D.C. 20510

Office of Congressman Rick Berg
323 Cannon HOB
Washington, D.C. 20515

USEPA Region 8
1595 Wynkoop Street
Denver, CO 80202-1129

Mr. Jeff Towner
U.S. Fish and Wildlife Service
North Dakota Field Office
3425 Miriam Avenue
Bismarck, ND 58501-7926

U.S. Fish and Wildlife, Migratory Bird Office
P.O. Box 25486 DFC
Denver, CO 80225

U.S. Department of Agriculture
Natural Resources Conservation Service
4775 Technology Circle #1B
Grand Forks, ND 58203-5635

Bismarck Regulatory Office
U.S. Army Corps of Engineers
1513 South 12th Street
Bismarck, ND 58504

Dr. Terry Dwelle, State Health Officer
North Dakota Department of Health
600 East Boulevard Avenue
Department 301
Bismarck, ND 58505-0200

Department of Energy
Western Area Power Administration
ND Maintenance Office
P.O. Box 1173
Bismarck, ND 58202-1173

Division of Community Services
ND Department of Commerce
1600 E. Century Avenue, Suite 2
P.O. Box 2057
Bismarck, ND 58202-2057

North Dakota State Water Commission
900 E Boulevard Ave, Dept 770
Bismarck, ND 58505-0850

Mr.Terry Steinwand, Commissioner
North Dakota Game and Fish
100 North Bismarck Expressway
Bismarck, ND 58505-5095

Mr. Merlen E. Paaverud
State Historic Preservation Officer
State Historical Society of North Dakota
612 East Boulevard Avenue
Bismarck, ND 58505-0830

Tribal Historic Preservation Officer
Indian Affairs Commission
600 E Boulevard
Bismarck, ND 58505-0300

Grand Forks County Board of Commissioners
P.O. Box 6372
Grand Forks, ND 58206-6372

Polk County Board of Commissioners
612 N. Broadway, Suite 215
Crookston, MN 56716

City of Grand Forks
P.O. Box 6372
Grand Forks, ND 58206-5200

Bureau of Indian Affairs
3801 Bemidji Avenue NW, Suite 5
Bemidji, MN 56601

Bureau of Indian Affairs
161 Saint Anthony Ave, Suite 919
Saint Paul, MN 55103

Bureau of Indian Affairs
Great Plains Regional Office
115 4th Avenue Southeast
Aberdeen, SD 57401

Native American Tribal Consultation Distribution List

The Draft EA and FONSI were made available to the Native American tribes listed below for a 30-day review period. A copy of the consultation letters and comments received are included below.

Spirit Lake Tribe
Myra Pearson, Chairwoman
P.O. Box 359
Fort Totten, ND 58335

Standing Rock Sioux Tribe
Charles W. Murphy, Chairman
P.O. Box D
Fort Yates, ND 58538

Three Affiliated Tribes
Tex G. Hall, Chairman
Fort Berthold Indian Reservation
404 Frontage Road
New Town, ND 58763-9402

Turtle Mountain Band of Chippewa Indians
Merle St. Claire, Chairman
Cory LaVallie, Administrative Assistant
4180 Highway 281
Belcourt, ND 58316

Cheyenne River Sioux Tribe
Kevin Keckler, Sr., Chairman
P.O. Box 590
Eagle Butte, SD 57625

Crow Creek Sioux Tribe
Duane Big Eagle
P.O. Box 50
Fort Thompson, SD 57339-0050

Flandreau Santee Sioux Tribe
Anthony Reider, President
P.O. Box 283
Flandreau, SD 57028

Lower Brule Sioux Tribe
Michael Jandreau, Chairman
P.O. Box 187
Lower Brule, SD 57548-0187

Oglala Sioux Tribe
John Yellow Bird Steele, President
P.O. Box 2070
Pine Ridge, SD 57770-2070

Rosebud Sioux Tribe
Rodney Bordeaux, Chairman
P.O. Box 430
Rosebud, SD 57570-0430

Sisseton-Wahpeton Oyate
Robert Shepherd, Chairman
P.O. Box 509
Agency Village, SD 57262-0509

Yankton Sioux Tribe
Robert Cournoyer, Chairman
P.O. Box 248
Marty, SD 57361-0248

Minnesota Chippewa Tribe
Bois Forte Band of Chippewa
Kevin Leecy, Chairman
5344 Lakeshore Drive
Nett Lake, MN 55772

Minnesota Chippewa Tribe
Fond du Lac Band of Chippewa
Karen R. Diver, Chairwoman
1720 Big Lake Road
Cloquet, MN 55720

Minnesota Chippewa Tribe
Leech Lake Band of Ojibwe
Arthur LaRose, Chairman
115 6th Street NW, Suite E
Cass Lake, MN 56633

Minnesota Chippewa Tribe
White Earth Ojibwe
Erma Vizenor, Chairwoman
White Earth, MN 56591

Minnesota Chippewa Tribe
Mille Lacs Band of Ojibwe
Marge A. Anderson, Chief Executive
43408 Oodena
Onamia, MN 56359

Minnesota Chippewa Tribe
Norman W. Deschampe, Chairman
Grand Portage Band
P.O. Box 428
Grand Portage, MN 55605

Red Lake Band of Chippewa Indians
Floyd "Buck" Jourdain, Chairman
P.O. Box 550
Red Lake, MN 56671

Shakopee Mdewakanton Sioux Community
Stanley R. Crooks, Chairman
2330 Sioux Trail NW
Prior Lake, MN 55372

Upper Sioux Indian Community
Kevin Jensvold, Chairman
P.O. Box 147
Granite Falls, MN 56241

Lower Sioux Indian Community
Gabe Prescott, President
P.O. Box 308
Morton, MN 56270

Prairie Island Indian Community
Victoria Winfrey, President
5636 Sturgeon Lake Road
Welch, MN 550889

Six comments were received by the Native American tribes affiliated with the Proposed Action during the comment review period. Five of the tribes indicated that they had no comment; the sixth tribe, the Cheyenne River Sioux Tribe, recommended having a Cultural Resource Monitor onsite during site clearing and earth-disturbance activities associated with the Proposed Action.

The Draft EA and FONSI were made available to the general public for a 30-day review period. The Notice of Availability (NOA) was published on 4 April 2011 in the *Grand Forks Herald*, as shown below. The Draft EA and FONSI were also made available to the general public at three local libraries (Grand Forks Library, East Grand Forks Campbell Library, and Grand Forks AFB Library). No comments from the general public were received.

Rural area

could be closed if the weather service's projection for 42 feet come as planned early Thursday morning.

But things should be better than they could have been. Two days ago, several inches of wet snow were expected to hit the region this weekend, with up to a foot falling in some places.

By 6 p.m. Sunday, however, only 2 to 3 inches of snow had fallen in northeast North Dakota and northwest Minnesota in a strip along the Canadian border, said John Hoppes, meteorologist with the weather service in Grand Forks.

Little snow and little rain fell on the Grand Forks area as temperatures stayed warmer than predicted, too.

Only 0.07 inch of precipitation was recorded at the Grand Forks International Airport Sunday and only 0.03 inch on UND's campus, Hoppes said. Much of the region received 0.1 inch of pre-

News

ident's debt commission," he

ment was called to the mobile home early Saturday after a neighbor reported seeing flames.

in the budget bill. Ryan ac-

PUBLIC NOTICE
United States Air Force

Notice of Availability
Draft Environmental Assessment (EA) Addressing Privatization of Military Family Housing (MFH) at Grand Forks Air Force Base (AFB), North Dakota

Headquarters Air Mobility Command, in conjunction with Grand Forks AFB, has completed a Draft EA that evaluates the potential effects of conveying MFH units, granting leases of land, and transferring responsibility for providing housing at Grand Forks AFB to a private developer (the Project Owner [PO]). The transition period would begin upon completion of contractual matters initiating the Proposed Action and would last for up to 6 years. During the transition period, the number of available MFH units would be gradually reduced from 866 to 547 units, but at no time would there be fewer than 547 units available. At all times during the transition period, sufficient numbers of MFH units for all eligible pay grades would be maintained.

The analysis considered in detail potential environmental effects of the Proposed Action and the No Action Alternative. The results, as found in the EA, show that the Proposed Action would not have a significant adverse impact on the environment, indicating that a Finding of No Significant Impact would be appropriate. An Environmental Impact Statement would not be necessary to implement the Proposed Action.

Copies of the Draft EA showing the analysis are available for review at the following libraries:

Grand Forks Library
2110 Library Circle
Grand Forks, ND 58201
701-772-8116

East Grand Forks Campbell Library
422 4th Street NW
East Grand Forks, MN 56721
218-773-9354

Grand Forks AFB Library
511 Holzapple Street
Grand Forks AFB, ND 58205
701-747-3046

The document is also available at:

http://www.grandforks.af.mil/library

Written comments on the Draft EA are invited and will be received for 30 days from the publication of this notice. Comments for consideration by the USAF on this document should be provided in writing to:

Public Affairs Office
319th Air Base Wing
375 Steen Boulevard, Building 313
Grand Forks AFB, North Dakota 58205
Email: PublicAffairsOfficeGrandForksAFB@us.af.mil
Phone: 701-747-5023

problems with heater treaters.

Kodiak Oil and Gas on Wednesday reported 40 bar-

muscles and soft tissue at the back of the throat relax, causing a narrowing of the airway, sometimes blocking it completely. This results in pauses in breathing that can be a few seconds to minutes long and occur 5 to 30 times an hour. These pauses cause a drop in blood oxygen, which signals the brain to disrupt sleep, thereby helping to re-open the airway. OSA is usually characterized by loud snoring, pauses in breathing, choking or gasping sounds, daytime drowsiness, difficulty concentrating, and morning headache or dry throat.

APPENDIX D

REQUIRED AND DESIRED FEATURES FOR PRIVATIZED GRAND FORKS AFB MFH UNITS

Appendix D

Required and Desired Features for Privatized Grand Forks AFB MFH Units

New Housing Construction

Design and construction of all new housing units shall provide the following:

General Requirements. Designs and construction shall comply with all applicable codes, standards, and regulations; meet basic requirements described herein; and shall be appropriate to the climate and lifestyle of the area. Designs shall provide innovative design and construction techniques conforming to local market (private-sector) standards for quality housing. The local market area is defined as being within a 60-minute or 20-mile commute (whichever is greater) during peak driving conditions. Best professional judgment shall be exercised in choice of style, type, design, configuration, functional solutions, and materials. Each neighborhood shall have an identification sign at the entrance of each neighborhood.

Floor Plans. Floor plans shall incorporate orderly arrangement of functions, minimize circulation, and maximize open spaces. Designs shall provide inviting entrances, indoor/outdoor integration, and pleasing interior appearance. Kitchens shall have a modern, well-organized work area with quality fixtures, appliances, and finishes. Layout of bathrooms shall follow modern planning techniques and utilize quality fixtures. Maximized storage space is an essential element due to the mobility of Air Force families. Interior storage shall include conveniently located and adequately sized cabinets; and coat, linen, pantry, bulk storage, and clothes closets. Exterior storage shall include maximized space for bikes and mowers.

Handicap Accessibility. At least 5 percent of the total end-state number of housing units shall be compliant with the Americans with Disabilities Act (ADA), meaning either handicap accessible, or "readily adaptable" to be accessible, including entrance ramps, bathroom grab bars, and chair lifts. "Accessible" means the units can be approached, entered, and used by physically handicapped people. Modifications shall be accomplished on a high-priority basis when a requirement is identified. The housing units shall comply with the accessibility standards set forth in all applicable Federal, state, or local laws pertaining to accessibility, together with the Fair Housing Act (FHA) and the relevant provisions of the Uniform Federal Accessibility Standards (UFAS) dealing with accessibility. In complying with said authorities, the private developer (the Highest Ranked Offerer [HRO]) shall abide by those provisions that are the most stringent. Should the HRO choose to make the premises "readily adaptable" then the HRO shall bear the cost of making the housing units accessible at its sole expense.

Elevations. Elevation designs shall provide pleasing and interesting appearances, comparable to other quality residential developments currently being built and marketed in the area. The elevations shall be inviting with modulated facades, rooflines, and massing to provide interest. Materials and colors shall be varied to break up facades of larger structures and prevent excessive uniformity among the smaller units.

Energy Efficiency. Design, materials, equipment, and construction methods shall reduce energy and water consumption to current Energy Star criteria. Design features shall include optimizing glass locations and areas; optimizing insulation in exterior walls, ceilings, and between adjoining units; weatherstripping throughout; and minimizing duct leakage. Attention to construction details, exterior fenestration materials, and passive solar energy systems shall be employed wherever possible.

Materials, Equipment, and Finishes. Materials, equipment, and finishes shall be durable, low maintenance, and functional. Choice of finishes shall be aesthetically pleasing with a richness of texture and detailing. Basic quality features include copper potable water plumbing, copper electrical wiring, dual-pane insulated windows and patio doors, storm doors with screens at main entrances, and overhead lighting in bedrooms and large closets.

Attached Units. Stacked units are not acceptable. No more than six dwelling units per building shall be constructed. Units shall include privacy features including a Sound Transmission Class (STC) rating of 55 between living units.

Parking and Roads. All units shall have provisions for parking two vehicles off-street. Additional parking spaces shall be provided throughout the neighborhoods for guest parking at a rate of one parking space for every two units except for General Officers Quarters (GOQ), Senior Officers Quarters (SOQ), and Prestige units which shall have nearby guest parking available for additional vehicles per unit. All attached units shall have a one-car garage with an automatic door opener. All single-family detached units shall have a two-car garage with an automatic door opener. All roads and turns shall be large enough to allow moving vans, fire trucks, etc. to adequately move around the community as needed, and all roads and parking areas shall have adequate snow stacking capacity and storm drainage.

Privacy. All units shall have patios with screened fencing or landscaping to provide a private area in the rear of each unit.

Window Treatments. The HRO shall provide window coverings (such as mini-blinds) in all units.

Floor Finishes. All units shall have high quality, durable, low-maintenance hard finish flooring in kitchen, informal dining area, wet areas, and high traffic areas. All units shall have carpet in bedrooms and other living areas.

Appliances. All appliances shall be energy-efficient, new, and from an established manufacturer. Each housing unit shall be provided with the following items:

- Combination refrigerator/freezer (minimum 18 cubic feet [ft^3] for 2-bedroom units and 21 ft^3 for 3-and 4-bedroom units)
- Built-in two-level dishwasher
- Four-burner stove with self-cleaning oven, view window, and vent hood
- Built-in microwave oven
- Garbage disposal
- Carbon monoxide detector
- Interior floor space and connections shall be provided for a full size washer and dryer (electric and natural gas connections)
- Interior floor space and connections for a full-size freezer.

Equipment. All units shall be provided with high-energy efficient heating and ventilation. Central air conditioning systems shall be new and from an established manufacturer.

Telephone and Cable. All residential units shall be prewired for cable television (CATV) and telephone jacks. Telephone systems shall be in accordance with those standards set forth by the local telephone

company. Each bedroom, living area, and kitchen shall have one phone jack that can accommodate two lines and one cable outlet. The coordination of equipment locations and final design of utilities and services is subject to review by the government.

Mailboxes. The HRO shall provide cluster mailboxes for all units in accordance with U.S. Postal Service regulations. Single mailboxes for the GOQ, SOQ, and Prestige Family Housing units shall be provided.

Utilities. All new utility systems shall be designed and constructed by the HRO. The HRO shall coordinate all tie-in locations with the government. The HRO shall provide for the installation of all utility meters. All newly constructed units must have individual electric and natural gas meters. Utilities shall be connected to a utility provider by the HRO by the end of the Transition Period.

Termite Treatment. New foundations shall have soil treated for termites in accordance with state law, to include a certificate of termite treatment by the provider.

Exterior Features. Easily accessible hose bibs and exterior electrical outlets on the front and rear of the house shall be provided. Hidden trash container storage area shall be provided.

Group Desired Community Features

Below are some desired community features of MFH neighborhoods:

- Community center/clubhouse with exercise room
- Community-wide and neighborhood-wide recreational facilities in the interior of neighborhoods, including items such as group picnic areas, swimming pools, pavilions, tables, grills, library space
- Road and trail connectivity among all neighborhoods
- Concrete walks or asphalt trails leading to playgrounds where possible
- Tennis courts (preferably lighted)
- Volleyball courts
- Covered bus shelters
- Indoor playground and splash park.

Specific Requirements

In addition to the above General Requirements, proposed designs and construction shall provide the following:

Prestige Family Housing (E-9). Prestige housing may be detached single-family or attached multifamily-type housing. Any Prestige Family Housing units constructed at Grand Forks AFB shall be completed and ready for occupancy prior to the demolition of the existing Prestige Family Housing units. Prestige Housing shall meet at a minimum the following standards:

- A geographically separate location in base housing
- Garages with automatic door openers and storage space
- Additional off-street parking
- Larger, enhanced patios with privacy screening
- Central air conditioning in all habitable areas

- Carpeted and/or upgraded floor treatments
- Ceiling fans and upgraded mini-blinds or other window treatments
- Upgraded kitchens and appliances
- At least two full bathrooms.

Prestige Housing for all designated key and essential E-9 positions shall have 4-bedrooms. Newly constructed units to be designated for the Command Chiefs, shall be single-family detached units, at least 10 percent larger than the largest E-9 unit.

General Officers Quarters (O-7+). Any housing and associated improvements for General Officers (O-7+) shall be designed and constructed as single-family detached units. The design of any GOQs that are constructed at Grand Forks AFB shall be in conjunction with local architectural and climatic conditions. If any new GOQs are constructed, those units shall be completed and ready for occupancy prior to the demolition of the existing GOQs. Refer to **Table D-1** for the square footage requirements for GOQ units.

Table D-1. GOQ and SOQ Housing Requirements for New Construction

Requirement	Type of Unit	
	Four-bedroom	
	Rank/Grade	
	O–6	O–7 to O–10
Minimum Gross (ft^2)*	2,110	2,600
Programming Benchmark (ft^2)*	2,520	3,330
Maximum Gross (ft^2)*	2,920	4,060

Note:

* All interior spaces within the exterior faces of exterior walls of housing units with the following areas of exclusion: carports and garages, exterior bulk storage (detached), trash enclosures, porches, terraces, patios, balconies, and entrance stoops.

Two-car garages would be provided for detached homes.

The HRO shall provide quality finishes for the floor, architectural millwork, wall base, walls, ceilings, window treatments and coverings, light fixtures, entryway, staircases (if applicable), cabinetry, countertops, and appliances for each habitable area. The HRO shall also use quality roof materials, exterior wall finishes, exterior window and door finishes, and upscale landscaping.

In addition to standard residential telephone service, the HRO shall supply and install a minimum of two telephone lines, two CATV lines, one fiber optic line, and one Unshielded Twisted Pair (UTP) where available in the local community. The HRO shall also supply associated terminals and distribution boxes to be designated only for government use for each unit. The location within the units shall be the same as for the regular telephone boxes. The government shall own and maintain the terminals, cable, and the distribution box after installation. Telecommunication standard 568A shall apply to dedicated government cable.

Senior Officers Quarters (O-6). Any housing and associated improvements for Senior Officers (O-6) shall be designed and constructed as single-family detached units. If any new SOQs are constructed, those units shall be completed and ready for occupancy prior to the demolition of the existing SOQs. In addition to standard residential telephone service, the HRO shall supply and install a minimum of two telephone lines, two CATV lines, one fiber optic line, and one UTP where available in the local

community. The HRO shall also supply associated terminals and distribution boxes to be designated only for government use for each unit. The location within the units shall be the same as for the regular telephone boxes. The government shall own and maintain the terminals, cable, and the distribution box after installation. Telecommunication standard 568A shall apply to dedicated government cable. The SOQ designs shall provide ample area for entertaining dignitaries and officials. Refer to **Table D-1** for the square footage requirements for SOQs.

Enlisted and Non-Senior Officer Housing (E-1 to E-8 and O-1 to O-5). Any design and construction of Enlisted and Non-Senior Officer Housing units and associated improvements shall be a mixture of multiplex and detached single-family housing. Construction shall be complete within five years of project closing. **Table D-2** shows the type units per grade, broken down by square footage according to the minimum, programming benchmark, and maximum size.

Table D-2. Enlisted and Non-Senior Officer Housing Requirements for New Construction

Requirement	Type of Unit							
	Two-bedroom Modified		Three-bedroom			Four-bedroom		
	Rank/Grade							
	E-1 to E-6	E-7 to E-8 and O-1 to O-3	E-1 to E-6	E-7 to E-8 and O-1 to O-3	E-9 and O-4 to O-5	E-1 to E-6	E-7 to E-8 and O-1 to O-3	E-9 and O-4 to O-5
Minimum Gross (ft^2)*	1,330	1,420	1,490	1,670	1,740	1,670	1,800	1,920
Programming Benchmark Gross (ft^2)*	1,480	1,670	1,630	1,860	2,020	1,950	2,150	2,310
Maximum Gross (ft^2)*	1,630	1,920	1,760	2,050	2,300	2,220	2,500	2,700

Note:

* All interior spaces within the exterior faces of exterior walls and center line of party walls (in multiplex units) of housing units, with the following areas of exclusion: garages, exterior bulk storage (detached), trash enclosures, porches, terraces, patios, balconies, and entrance stoops.

Two-car garages would be provided for detached homes and one-car garages for multiplex family units.

Two-Bedroom Modified Units. The HRO shall design and construct two-bedroom modified units with an additional room between 110–120 net square feet to provide flexible living space for residents and would be designed to serve as a family room, bedroom, den, or playroom. The additional room shall include a closet. The two-bedroom modified design shall also include an additional three-quarters-size bathroom between 45 and 50 net square feet. The three-quarters-bath shall include, at a minimum, a vanity sink, toilet, and shower.

Desired New Housing Construction Features

The desired features listed below are in descending order of importance.

- Additional square footage above the programming benchmark
- Access to front and rear of unit through house and garage
- More single-family units in lieu of multiplex units
- Reduced number of dwelling units per building
- Walk-in clothes closets
- Double sinks in bathrooms
- Ceiling fans with light fixtures
- Overhead lighting in all rooms, switched at the entry door
- Programmable thermostats.

Renovation

General Requirements. General Requirements for New Construction (as mentioned above) shall be used to the extent possible in the renovation of existing units. If any Prestige, General Officer, or Senior Officer housing is to be renovated, the requirements specified in New Construction as mentioned above shall be followed. **Tables D-3** and **D-4** show the type units per grade, broken down by square footage according to the minimum, programming benchmark, and maximum size.

The above rows stating "Maximum" gross square footages are furnished only as information on maximum gross square footages applicable to military construction projects, and are not to be construed as an upper limitation on unit gross square footage sizes which would be acceptable under this Solicitation. Offerors may propose units larger than these maximum gross square footage sizes so long as such room patterns and floor areas are generally comparable to similar housing units in the locality concerned.

Desired Renovation Features

Desired features listed below are in descending order of importance.

- Newly constructed units in lieu of renovated units (excluding historic units)
- Additional square footage above the programming benchmark
- Access to front and rear of unit through house and garage
- More single-family units in lieu of multiplex units
- Reduced number of dwelling units per building
- Walk-in clothes closets
- Double sinks in bathrooms
- Ceiling fans with light fixtures
- Overhead lighting in all rooms, switched at the entry door
- Programmable thermostats
- Built-in microwave ovens
- Larger decks and patios
- Six-foot privacy fencing.

Table D-3. Renovation Size Requirements – Enlisted and Non-Senior Officer Housing

Requirement	Type of Unit							
	Two Bedroom Modified		Three Bedroom			Four Bedroom		
	Rank/Grade							
	E–1 to E–6	E–7 to E-8 and O–1 to O–3	E–1 to E–6	E–7 to E–8 and O–1 to O–3	E-9 and O–4 to O–5	E–1 to E–6	E–7 to E–8 and O–1 to O–3	E-9 and O–4 to O–5
Minimum Gross (ft^2)*	1,220	1,300	1,370	1,530	1,590	1,530	1,650	1,760
Benchmark Gross (ft^2)*	1,330	1,420	1,490	1,670	1,740	1,670	1,800	1,920
Maximum Gross (ft^2)*	1,480	1,670	1,630	1,860	2,020	1,950	2,150	2,310

Note:

* All interior spaces within the exterior faces of exterior walls and center line of party walls (in multiplex units) of housing units with the following areas of exclusion: carports and garages, exterior bulk storage (detached), trash enclosures, porches, terraces, patios, balconies and entrance stoops. Any renovated units at Grand Forks shall have an additional 300 GSF of Arctic space.

Garages: 2 car for detached units; 1 car for multi-family units.

Table D-4. Renovation Size Requirements – Senior and General Officer Quarters

Requirement	Type of Unit	
	Four Bedroom	Four Bedroom
	Rank/Grade	
	O–6	O–7 to O–10
Minimum Gross Square Feet*	1,930	2,380
Benchmark Gross Square Feet*	2,110	2,600
Maximum Gross Square Feet*	2,520	3,330

Note:

* All interior spaces within the exterior faces of exterior walls and center line of party walls (in multiplex units) of housing units with the following areas of exclusion: carports and garages, exterior bulk storage (detached), trash enclosures, porches, terraces, patios, balconies and entrance stoops. Any renovated units at Grand Forks shall have an additional 300 GSF of Arctic space.

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APPENDIX E

REPRESENTATIVE PHOTOS OF MFH AREAS AT GRAND FORKS AFB

Appendix E

Representative Photos of MFH Areas at Grand Forks AFB

Dakota Skies

Prairie View Court

Holly

Meadowlark Manor

Northern Lights Estates

Red River Crossing

Roughrider Way

Whitetail Range

Playground in Prairie View Court

Dog Park

APPENDIX F

AIR EMISSIONS CALCULATIONS

Summary	Summarizes total emissions by calendar year for Privatization of Military Family Housing at Grand Forks Air Force Base, North Dakota
Combustion	Estimates emissions from non-road equipment exhaust.
Fugitive	Estimates particulate emissions from construction activities including earthmoving, vehicle traffic, and windblown dust.
Grading	Estimates the number of days of site preparation, to be used for estimating heavy equipment exhaust and earthmoving dust emissions.
Haul Truck On-Road	Estimates emissions from haul and water trucks delivering materials to the job site.
Construction Commuter	Estimates emissions for construction workers commuting to the site.
AQCR Tier Report	Summarizes total emissions for the State of North Dakota Air Quality Control Region 172 Tier report for 2002, to be used to compare the project to regional emissions.

Air Quality Emissions from Privatization of Military Family Housing at Grand Forks AFB

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (ton)
Construction Combustion	35.591	2.438	14.290	0.993	2.207	2.141	4,131.761
Construction Fugitive Dust	-	-	-	-	60.663	3.191	-
Haul and Water Trucks	1.738	1.256	5.106	0.137	2.066	0.537	439.921
Construction Commuter	0.110	0.110	0.992	0.001	0.010	0.007	131.482
TOTAL	***37.439***	***3.805***	***20.387***	***1.131***	***64.947***	***5.875***	***4,703.164***

Note: Total CY2010 $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***4,265.769***	***metric tons***
State of North Dakota's CO_2 emissions =	***53,550,515***	***metric tons*** *(DOE/EIA 2010)*
Percent of North Dakota's CO_2 emissions =	***0.008%***	***metric tons***

Source: U.S. Department of Energy (DOE)/Energy Information Administration (EIA). 2010. State Carbon Dioxide Emissions Summary for the State of North Dakota. Released 4 February 2010. Available online: <http://www.eia.doe.gov/oiaf/1605/state/state_emissions.html>. Accessed 18 March 2010.

Since future year budgets were not readily available, actual 2002 air emissions inventories for the counties were used as an approximation of the regional inventory. Because the Proposed Action is several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

State of North Dakota Air Quality Control Region 172

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2002	167,162	41,961	295,198	165,860	355,336	63,216

Source: USEPA-AirData NET Tier Report (http://www.epa.gov/air/data/geosel.html). Site visited on 18 March 2010.

Air Emissions from Privatization of Military Family Housing at Grand Forks AFB
Determination Significance (Significance Threshold = 10% of regional)

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	167,162	41,961	295,198	165,860	355,336	63,216
Emissions	37.44	3.80	20.39	1.13	64.95	5.88
% of Regional	**0.022%**	**0.009%**	**0.007%**	**0.001%**	**0.018%**	**0.009%**

Combustion Emissions

Combustion Emissions of VOC, NO_x, SO_2, CO, $PM_{2.5}$, $PM_{10,}$ and CO_2 due to Construction

General Construction Activities	Area Disturbed	
Construct Community Center/Clubhouse/Splash Park	30,000 ft^2	Assume one centralized Community Center/Clubhouse with indoor playground and splash park (30,000 ft^2).
Construct Storage Facilities for MFH Residents	50,000 ft^2	Assume one storage facility (50,000 ft^2).
Construct Dog Park	73,004 ft^2	Assume whole area will be disturbed.
Construct MFH Site Improvements (Drainages, etc.)	375,000 ft^2	Assume 25,000 ft long by 15 ft wide.
Install Utility Lines for new facilities (Community Center/Storage and individual meters)	30,000 ft^2	Assume 10,000 ft long by 3 ft wide.
Construct new MFH Pavements (driveways, sidewalks, vehicular parking areas, and roadways)	108,900 ft^2	Assume 2.5 acres of new pavements will be required for new planned facilities.
Demolish Existing Pavements in Demolition Areas (driveways, sidewalks, vehicular parking areas, and roadways)	1,225,977 ft^2	Assume 1.5 acres of new paved surfaces will need for storage facilities and 1 acre of new paved surfaces will be need for the community center.
Demolish 286 MFH Units	413,604 ft^2	
Total General Construction Area:	558,004 ft^2	
	12.8 acres	
Total Demolition Area:	1,639,581 ft^2	
	37.6 acres	
Total Pavement Area:	108,900 ft^2	
	2.5 acres	
Total Disturbed Area:	2,306,485 ft^2	
	52.9 acres	
Construction Duration:	12 months	
Annual Construction Activity:	240 days/yr	Assume 12 months, 4 weeks per month, 5 days per week.

Emission Factors Used for Construction Equipment

References: Guide to Air Quality Assessment, SMAQMD, 2004; and U.S. EPA NONROAD Emissions Model, Version 2005.0.0
Emission factors are taken from the NONROAD model and were provided to e²M by Larry Landman of the Air Quality and Modeling Center (Landman.Larry@epamail.epa.gov) on 12/14/07. Factors provided are for the weighted average US fleet for CY2007.
Assumptions regarding the type and number of equipment are from SMAQMD Table 3-1 unless otherwise noted.

Grading

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c] (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Bulldozer	1	13.60	95.742%	5.50	1.02	0.89	0.87	1456.90
Motor Grader	1	9.69	0.73	3.20	0.80	0.66	0.64	1141.65
Water Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Total per 10 acres of activity	3	41.64	2.58	15.71	0.83	2.55	2.47	4941.53

Paving

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c] (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Paver	1	3.83	0.37	2.06	0.28	0.35	0.34	401.93
Roller	1	4.82	0.44	2.51	0.37	0.43	0.42	536.07
Truck	2	36.71	1.79	14.01	3.27	1.99	1.93	4685.95
Total per 10 acres of activity	4	45.37	2.61	18.58	0.91	2.78	2.69	5623.96

Demolition

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c] (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Loader	1	13.45	0.99	5.58	0.95	0.93	0.90	1360.10
Haul Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Total per 10 acres of activity	2	31.81	1.89	12.58	0.64	1.92	1.87	3703.07

Building Construction

Equipment[d]	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c] (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Stationary								
Generator Set	1	2.38	0.32	1.18	0.15	0.23	0.22	213.06
Industrial Saw	1	2.62	0.32	1.97	0.20	0.32	0.31	291.92
Welder	1	1.12	0.38	1.50	0.08	0.23	0.22	112.39
Mobile (non-road)								
Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Forklift	1	5.34	0.56	3.33	0.40	0.55	0.54	572.24
Crane	1	9.57	0.66	2.39	0.65	0.50	0.49	931.93
Total per 10 acres of activity	6	39.40	3.13	17.38	3.12	2.83	2.74	4464.51

Note: Footnotes for tables are on following page

Architectural Coatings

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c]	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Air Compressor	1	3.57	0.37	1.57	0.25	0.31	0.30	359.77
Total per 10 acres of activity	1	3.57	0.37	1.57	0.25	0.31	0.30	359.77

a) The SMAQMD 2004 guidance suggests a default equipment fleet for each activity, assuming 10 acres of that activity, (e.g., 10 acres of grading, 10 acres of paving, etc.). The default equipment fleet is increased for each 10 acre increment in the size of the construction project. That is, a 26 acre project would round to 30 acres and the fleet size would be three times the default fleet for a 10 acre project.

b) The SMAQMD 2004 reference lists emission factors for reactive organic gas (ROG). For the purposes of this worksheet ROG = VOC. The NONROAD model contains emissions factors for total HC and for VOC. The factors used here are the VOC factors.

c) The NONROAD emission factors assume that the average fuel burned in nonroad trucks is 1100 ppm sulfur. Trucks that would be used for the Proposed Actions will all be fueled by highway grade diesel fuel which cannot exceed 500 ppm sulfur. These estimates therefore over-estimate SO2 emissions by more than a factor of two.

d) Typical equipment fleet for building construction was not itemized in SMAQMD 2004 guidance. The equipment list above was assumed based on SMAQMD 1994 guidance.

PROJECT-SPECIFIC EMISSION FACTOR SUMMARY

Source	Equipment Multiplier*	Project-Specific Emission Factors (lb/day)						
		NO_x	VOC	CO	SO_2**	PM_{10}	$PM_{2.5}$	CO_2
Grading Equipment	5	208.206	12.885	78.549	4.164	12.728	12.346	24707.632
Paving Equipment	1	45.367	2.606	18.578	0.907	2.776	2.693	5623.957
Demolition Equipment	4	127.230	7.542	50.335	2.545	7.693	7.462	14812.295
Building Construction	1	39.396	3.130	17.382	3.116	2.829	2.744	4464.512
Air Compressor for Architectural Coating	1	3.574	0.373	1.565	0.251	0.309	0.300	359.773
Architectural Coating**			23.052					

*The equipment multiplier is an integer that represents units of 10 acres for purposes of estimating the number of equipment required for the project.

**Emission factor is from the evaporation of solvents during painting, per "Air Quality Thresholds of Significance", SMAQMD, 1994

Example: SMAQMD Emission Factor for Grading Equipment NOx = (Total Grading NOx per 10 acre)*(Equipment Multiplier)

Summary of Input Parameters

	Total Area (ft^2)	Total Area (acres)	Total Days	
Grading:	2,306,485	52.95	6	(from "Grading" worksheet)
Paving:	108,900	2.50	12	
Demolition:	1,639,581	37.64	470	
Building Construction:	80,000	1.84	240	
Architectural Coating	80,000	1.84	20	(per SMAQMD "Air Quality of Thresholds of Significance", 1994)

NOTE: The 'Total Days' estimate for paving is calculated by dividing the total number of acres by 0.21 acres/day, which is a factor derived from the 2005 MEANS Heavy Construction Cost Data, 19th Edition, for 'Asphaltic Concrete Pavement, Lots and Driveways - 6" stone base', which provides an estimate of square feet paved per day. There is also an estimate for 'Plain Cement Concrete Pavement', however the estimate for asphalt is used because it is more conservative. The 'Total 'Days' estimate for demolition is calculated by dividing the total number of acres by 0.02 acres/day, which is a factor also derived from the 2005 MEANS reference. This is calculated by averaging the demolition estimates from 'Building Demolition - Small Buildings, Concrete', assuming a height of 30 feet for a two-story building; from 'Building Footings and Foundations Demolition - 6" Thick, Plain Concrete'; and from 'Demolish, Remove Pavement and Curb - Concrete to 6" thick, rod reinforced'. Paving is double-weighted since projects typically involve more paving demolition. The 'Total Days' estimate for building construction is assumed to be 230 days, unless project-specific data is known.

Total Project Emissions by Activity (lbs)

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
Grading Equipment	1,249.24	77.31	471.30	24.98	76.37	74.07	148,246
Paving	544.41	31.27	222.94	10.89	33.31	32.31	67,487
Demolition	59,861.23	3,548.51	23,682.40	1,197.22	3,619.40	3,510.82	6,969,111
Building Construction	9,455.12	751.15	4,171.75	747.92	678.97	658.60	1,071,483
Architectural Coatings	71.48	468.50	31.31	5.02	6.19	6.00	7,195
Total Emissions (lbs):	**71,181.47**	**4,876.74**	**28,579.70**	**1,986.04**	**4,414.24**	**4,281.81**	**8,263,522**

Results: Total Project Annual Emission Rates

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
Total Project Emissions (lbs)	71,181.47	4,876.74	28,579.70	1,986.04	4,414.24	4,281.81	8,263,522
Total Project Emissions (tons)	35.59	2.44	14.29	0.99	2.21	2.14	4,131.76

Construction Fugitive Dust Emissions

Construction Fugitive Dust Emission Factors

	Emission Factor	Units	Source
General Construction Activities	0.19	ton PM_{10}/acre-month	MRI 1996; EPA 2001; EPA 2006
New Road Construction	0.42	ton PM_{10}/acre-month	MRI 1996; EPA 2001; EPA 2006

$PM_{2.5}$ Emissions

$PM_{2.5}$ Multiplier	0.10	(10% of PM_{10} emissions assumed to be $PM_{2.5}$)	EPA 2001; EPA 2006
Control Efficiency	0.50	(assume 50% control efficiency for PM_{10} and $PM_{2.5}$ emissions)	EPA 2001; EPA 2006

Project Assumptions

New Roadway Construction (0.42 ton PM_{10}/acre-month)

Duration of Construction Project	6	months
Area	2.5	acres

General Construction Activities (0.19 ton PM_{10}/acre-month)

Duration of Construction Project	12	months
Area	50.4	acres

	Project Emissions (tons/year)			
	PM_{10} uncontrolled	PM_{10} controlled	$PM_{2.5}$ uncontrolled	$PM_{2.5}$ controlled
New Roadway Construction	6.30	3.15	0.63	0.32
General Construction Activities	115.03	57.51	5.75	2.88
Total	**121.33**	**60.66**	**6.38**	**3.19**

Construction Fugitive Dust Emission Factors

General Construction Activities Emission Factor

0.19 ton PM_{10}/acre-month Source: MRI 1996; EPA 2001; EPA 2006

The area-based emission factor for construction activities is based on a study completed by the Midwest Research Institute (MRI) Improvement of Specific Emission Factors (BACM Project No. 1), March 29, 1996. The MRI study evaluated seven construction projects in Nevada and California (Las Vegas, Coachella Valley, South Coast Air Basin, and the San Joaquin Valley). The study determined an average emission factor of 0.11 ton PM_{10}/acre-month for sites without large-scale cut/fill operations. A worst-case emission factor of 0.42 ton PM_{10}/acre-month was calculated for sites with active large-scale earth moving operations. The monthly emission factors are based on 168 work-hours per month (MRI 1996). A subsequent MRI Report in 1999, Estimating Particulate Matter Emissions From Construction Operations, calculated the 0.19 ton PM_{10}/acre-month emission factor by applying 25% of the large-scale earthmoving emission factor (0.42 ton PM_{10}/acre-month) and 75% of the average emission factor (0.11 ton PM_{10}/acre-month). The 0.19 ton PM_{10}/acre-month emission factor is referenced by the EPA for non-residential construction activities in recent procedures documents for the National Emission Inventory (EPA 2001; EPA 2006). The 0.19 ton PM_{10}/acre-month emission factor represents a refinement of EPA's original AP-42 area-based total suspended particulate (TSP) emission factor in Section 13.2.3 Heavy Construction Operations. In addition to the EPA, this methodology is also supported by the South Coast Air Quality Management District as well as the Western Regional Air Partnership (WRAP) which is funded by the EPA and is administered jointly by the Western Governor's Association and the National Tribal Environmental Council. The emission factor is assumed to encompass a variety of non-residential construction activities including building construction (commercial, industrial, institutional, governmental), public works, and travel on unpaved roads. The EPA National Emission Inventory documentation assumes that the emission factors are uncontrolled and recommends a control efficiency of 50% for PM_{10} and $PM_{2.5}$ in PM nonattainment areas.

New Road Construction Emission Factor

0.42 ton PM_{10}/acre-month Source: MRI 1996; EPA 2001; EPA 2006

The emission factor for new road construction is based on the worst-case conditions emission factor from the MRI 1996 study described above (0.42 tons PM_{10}/acre-month). It is assumed that road construction involves extensive earthmoving and heavy construction vehicle travel resulting in emissions that are higher than other general construction projects. The 0.42 ton PM10/acre-month emission factor for road construction is referenced in recent procedures documents for the EPA National Emission Inventory (EPA 2001; EPA 2006).

$PM_{2.5}$ Multiplier **0.10**

$PM_{2.5}$ emissions are estimated by applying a particle size multiplier of 0.10 to PM_{10} emissions. This methodology is consistent with the procedures documents for the National Emission Inventory (EPA 2006).

Control Efficiency for PM_{10} and $PM_{2.5}$ **0.50**

The EPA National Emission Inventory documentation recommends a control efficiency of 50% for PM_{10} and $PM_{2.5}$ in PM nonattainment areas (EPA 2006). Wetting controls will be applied during project construction.

References:

EPA 2001. *Procedures Document for National Emissions Inventory, Criteria Air Pollutants, 1985-1999.* EPA-454/R-01-006. Office of Air Quality Planning and Standards, United States Environmental Protection Agency. March 2001.

EPA 2006. *Documentation for the Final 2002 Nonpoint Sector (Feb 06 version) National Emission Inventory for Criteria and Hazardous Air Pollutants.* Prepared for: Emissions Inventory and Analysis Group (C339-02) Air Quality Assessment Division Office of Air Quality Planning and Standards, United States Environmental Protection Agency. July 2006.

MRI 1996. *Improvement of Specific Emission Factors (BACM Project No. 1).* Midwest Research Institute (MRI). Prepared for the California South Coast Air Quality Management District, March 29, 1996.

Grading Schedule

Estimate of time required to grade a specified area.

Input Parameters
Construction area: 52.9 acres/yr (from Combustion Worksheet)
Qty Equipment: 16.0 (calculated based on 3 pieces of equipment for every 10 acres)

Assumptions.
Terrain is mostly flat.
An average of 6" soil is excavated from one half of the site and backfilled to the other half of the site; no soil is hauled off-site or borrowed.
200 hp bulldozers are used for site clearing.
300 hp bulldozers are used for stripping, excavation, and backfill.
Vibratory drum rollers are used for compacting.
Stripping, Excavation, Backfill and Compaction require an average of two passes each.
Excavation and Backfill are assumed to involve only half of the site.

Calculation of days required for one piece of equipment to grade the specified area.

Reference: Means Heavy Construction Cost Data, 19th Ed., R. S. Means, 2005.

Means Line No.	Operation	Description	Output	Units	Acres per equip-day)	equip-days per acre	Acres/yr (project-specific)	Equip-days per year
2230 200 0550	Site Clearing	Dozer & rake, medium brush	8	acre/day	8	0.13	52.95	6.62
2230 500 0300	Stripping	Topsoil & stockpiling, adverse soil	1,650	cu. yd/day	2.05	0.49	52.95	25.89
2315 432 5220	Excavation	Bulk, open site, common earth, 150' haul	800	cu. yd/day	0.99	1.01	26.47	26.70
2315 120 5220	Backfill	Structural, common earth, 150' haul	1,950	cu. yd/day	2.42	0.41	26.47	10.95
2315 310 5020	Compaction	Vibrating roller, 6 " lifts, 3 passes	2,300	cu. yd/day	2.85	0.35	52.95	18.57
TOTAL								88.72

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 88.72
Qty Equipment: 16.00
Grading days/yr: 5.55

Haul and Water Truck Emissions

Emissions from hauling the raw materials for concrete and fill are estimated in this spreadsheet.

Emission Estimation Method: United States Air Force (USAF) Institute for Environment, Safety and Occupational Health Risk Analysis (IERA) Air Emissions Inventory Guidance Document for Mobile Sources at Air Force Installations (Revised December 2003).

Raw Material Assumptions:

Haul trucks carry 20 cubic yards of material per trip.

The distance from the borrow pit is 5 miles, therefore the haul truck will travel 10 miles roundrip.

Estimated number of trips required by haul trucks = total amount of material to be brought on installation/20 cubic yards per truck

Total amount of imported materials =	463,479	cubic yards
Number of trucks required =	23,174	heavy duty diesel haul trucks
Miles per trip =	10	miles

Water Transportation Assumptions:

Water trucks carry 4,000 gallons per truckload.

Approximately 43,131,270 gallons of water will be required during construction.

Approximately 1/8 inch of water would be applied to project area once per day.

The distance from the nearest water source is 0.5 miles, therefore the water truck will travel 1 mile roundrip.

Estimated number of trips required by water trucks = total gallons of water to be brought to project site/4,000 gallons per truck

Total amount of water needed for construction =	43,131,270	gallons
Number of trucks required =	10,783	heavy duty diesel haul trucks
Miles per trip =	1	miles

Heavy Duty Diesel Vehicle (HDDV) Average Emission Factors (grams/mile)

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
HDDV	**6.500**	**4.7000**	**19.10**	**0.512**	**7.7**	**2.01**	**1646**

Notes:

Emission factors for all pollutants except CO_2 are from USAF IERA 2003.

Emission factors for PM, PM_{10}, SO_x are from HDDV in Table 4-50 (USAF IERA 2003).

Emission factors for VOC, CO, and NO_x are from Tables 4-41 through 4-43 for the 2010 calendar year, 2000 model year (USAF IERA 2003).

Diesel fuel produces 22.384 pounds of CO_2 per gallon.

It is assumed that the average HDDV has a fuel economy of 6.17 miles per gallon, Table 4-51 (USAF IERA 2003)

CO_2 emission factor = 22.384 lbs CO_2/gallon diesel * gallon diesel/6.17 miles * 453.6 g/lb

HDDV Haul and Water Truck Emissions From Construction Activities

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
lbs	**3475.30**	**2512.91**	**10212.03**	**273.75**	**4132.93**	**1074.67**	**879841.20**
tons	**1.738**	**1.256**	**5.106**	**0.137**	**2.066**	**0.537**	**439.921**

Example Calculation: NO_x emissions (lbs) = miles per trip * number of trips * NO_x emission factor (g/mile) * lb/453.6 g

Construction Commuter Emissions

Emissions from construction workers commuting to the job site are estimated in this spreadsheet.

Emission Estimation Method: Emission factors from the South Coast Air Quality Management District (SCAQMD) EMFAC 2007 (v 2.3) Model (on-road) were used. These emission factors are available online at http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html.

Assumptions:
Passenger vehicle emission factors for scenario year 2010 are used

The average roundtrip commute for a construction worker =	40	miles
Number of construction days =	240	days
Number of construction workers (daily) =	25	people

Passenger Vehicle Emission Factors for Year 2010 (lbs/mile)

NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
0.00091814	0.00091399	0.00826276	0.00001077	0.00008698	0.00005478	1.09568235

Source: South Coast Air Quality Management District. EMFAC 2007 (ver 2.3) On-Road Emissions Factors. Last updated April 24, 2008. Available online: <http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html>. Accessed 27 May 2009.
Notes:
The SMAQMD 2007 reference lists emission factors for reactive organic gas (ROG). For purposes of this worksheet ROG = VOC

Construction Commuter Emissions

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
lbs	**220.354**	**219.357**	**1983.062**	**2.586**	**20.875**	**13.148**	**262963.764**
tons	**0.110**	**0.110**	**0.992**	**0.0013**	**0.0104**	**0.0066**	**131.482**

Example Calculation: NO_x emissions (lbs) = 60 miles/day * NO_x emission factor (lb/mile) * number of construction days * number of workers

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			Point Source Emissions (tpy)						Area Source Emissions (Non-Point and Mobile Sources) (tpy)					
Row #	State	County	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	VOC	CO	NOx	PM_{10}	$PM_{2.5}$	SO_2	VOC
1	ND	Adams Co	0	0	0	0	0	0	1,799	533	4,911	763	57.3	308
2	ND	Barnes Co	0	0	0	0	0	0	7,832	3,740	9,687	1,605	355	949
3	ND	Benson Co	0	0	0	0	0	0	4,941	1,130	7,364	1,173	145	700
4	ND	Billings Co	34.9	41.7	3.11	3.11	283	3.5	2,588	1,365	1,421	276	89.9	430
5	ND	Bottineau Co	0	0	0	0	0	0	5,583	1,559	7,809	1,315	179	723
6	ND	Bowman Co	0	0	0	0	0	0	2,250	738	2,716	447	73	390
7	ND	Burke Co	57.3	181	0.71	0.6	426	5.2	2,375	885	5,894	960	97.3	386
8	ND	Burleigh Co	0	0	0	0	0	0	22,345	4,560	10,005	1,495	713	3,001
9	ND	Cavalier Co	0	0	0	0	0	0	4,094	1,489	11,343	1,810	166	547
10	ND	Dickey Co	0	0	0	0	0	0	4,045	940	7,102	1,117	120	607
11	ND	Divide Co	0	0	0	0	0	0	2,457	888	5,056	844	104	394
12	ND	Dunn Co	96.8	100	0.84	0.51	5.3	13	2,845	737	4,129	676	93.7	438
13	ND	Eddy Co	0	0	0	0	0	0	2,038	1,125	3,357	558	91.7	328
14	ND	Emmons Co	0	0	0	0	0	0	2,911	652	5,232	822	84.8	414
15	ND	Foster Co	0	0	0	0	0	0	2,738	1,417	5,335	859	119	394
16	ND	Golden Valley Co	0	0	0	0	0	0	2,762	2,067	2,572	470	152	392
17	ND	Grand Forks Co	144	229	26.3	3.74	641	1.4	22,803	3,557	12,685	2,030	740	2,951
18	ND	Grant Co	0	0	0	0	0	0	2,188	550	5,993	946	59.6	380
19	ND	Griggs Co	0	0	0	0	0	0	2,210	1,263	4,956	805	128	369
20	ND	Hettinger Co	0	0	0	0	0	0	2,321	798	4,880	801	81.6	335
21	ND	Kidder Co	0	0	0	0	0	0	4,762	2,178	4,930	824	153	672
22	ND	LaMoure Co	0	0	0	0	0	0	3,540	1,113	7,937	1,269	146	498
23	ND	Logan Co	0	0	0	0	0	0	1,833	451	3,177	520	57.4	300
24	ND	McHenry Co	0.9	47	54.6	23.7	0.2	107	4,474	2,296	6,810	1,123	214	668
25	ND	McIntosh Co	95.9	105	0.9	0.55	6	12.8	2,497	598	4,067	647	86.4	355
26	ND	McKenzie Co	205	578	3.49	3.31	213	13	4,474	964	6,060	961	103	688
27	ND	McLean Co	1,908	10,357	2,911	2,349	24,428	153	7,588	1,734	11,053	1,748	179	1,206
28	ND	Mercer Co	3,974	45,350	3,334	2,904	91,617	588	5,111	768	3,341	576	96.4	1,085
29	ND	Morton Co	752	1,883	882	826	6,833	182	13,145	3,141	8,295	1,305	339	1,463
30	ND	Mountrail Co	0	0	0	0	0	0	5,348	1,897	6,831	1,113	195	803
31	ND	Nelson Co	0	0	0	0	0	0	2,670	752	6,055	949	89.6	381
32	ND	Oliver Co	1,100	22,845	1,390	1,256	28,565	241	1,717	374	2,573	425	46.1	271
33	ND	Pembina Co	568	758	193	78.7	730	145	8,051	1,889	8,196	1,264	275	817
34	ND	Pierce Co	0	0	0	0	0	0	2,344	1,110	5,630	924	138	570
35	ND	Ramsey Co	0	0	0	0	0	0	5,281	1,248	7,615	1,223	170	823
36	ND	Ransom Co	106	69	56.1	35.4	1.5	298	2,798	894	5,598	895	140	409
37	ND	Renville Co	0	0	0	0	0	0	2,627	992	5,270	875	102	390
38	ND	Richland Co	703	390	55.5	20.2	149	3	11,983	3,239	11,698	1,906	573	1,563
39	ND	Rolette Co	0	0	0	0	0	0	7,942	1,194	7,948	1,179	182	953
40	ND	Sargent Co	0	0	0	0	0	0	3,262	981	7,487	1,190	287	493
41	ND	Sheridan Co	0	0	0	0	0	0	1,893	626	3,952	655	69.2	386
42	ND	Sioux Co	0	0	0	0	0	0	2,362	355	2,875	362	55.5	328
43	ND	Slope Co	0	0	0	0	0	0	1,314	633	1,944	352	55.2	351
44	ND	Stark Co	60.5	180	0	0	0.3	17.5	11,710	3,396	6,239	1,019	399	1,471
45	ND	Steele Co	0	0	0	0	0	0	2,078	1,005	5,764	942	107	332
46	ND	Stutsman Co	0	0	0	0	0	185	12,048	4,131	11,090	1,852	380	1,679
47	ND	Towner Co	0	0	0	0	0	0	2,607	826	7,985	1,273	115	378
48	ND	Traill Co	684	446	126	53.1	479	15.5	7,800	1,855	10,296	1,603	167	845
49	ND	Walsh Co	0	0	0	0	0	0	8,114	1,892	9,819	1,555	291	1,006
50	ND	Ward Co	0	0	0	0	0	0	17,079	4,279	14,872	2,366	561	2,399
51	ND	Wells Co	0	0	0	0	0	0	3,959	1,943	9,669	1,546	187	549
52	ND	Williams Co	527	2,313	25.1	25.1	1,605	45.4	8,645	2,542	8,750	1,420	269	1,364
Grand Total			11,017	85,873	9,063	7,583	155,982	2,029	284,181	81,289	346,273	55,633	9,878	39,932

SOURCE:
http://www.epa.gov/air/data/geosel.html
USEPA - AirData NET Tier Report
*Net Air pollution sources (area and point) in tons per year (2002)
Site visited on 18 March 2010.

State of North Dakota Air Quality Control Region 172 (40 CFR 81.335)

APPENDIX G

SPECIES OF CONSERVATION PRIORITY OBSERVED ON GRAND FORKS AFB

Table G-1. Species of Conservation Priority Observed on Grand Forks AFB

Common Name	Scientific Name	Level I, II, or III*	Breeding Confirmed on Installation (Birds Only)
Birds			
Baird's sparrow	*Ammodramus bairdii*	I	No
Black tern	*Chlidonias niger*	I	No
Chestnut-collared longspur	*Calcarius ornatus*	I	No
Ferruginous hawk	*Buteo regalis*	I	No
Franklin's gull	*Larus pipixcan*	I	Yes
Grasshopper sparrow	*Ammodramus savannarum*	I	Yes
Horned grebe	*Podiceps auritus*	I	No
Swainson's hawk	*Buteo swainsoni*	I	Yes
Upland sandpiper	*Bartramia longicauda*	I	Yes
Willet	*Catoptrophorus semipalmatus*	I	No
Wilson's phalarope	*Phalaropus tricolor*	I	Yes
American avocet	*Recurvirostra americana*	II	No
Bald eagle	*Haliaeetus leucocephalus*	II	No
Bobolink	*Dolichonyx oryzivorus*	II	Yes
Canvasback	*Aythya valisineria*	II	Yes
Le Conte's sparrow	*Ammodramus leconteii*	II	Yes
Loggerhead shrike	*Lanius ludovicianus*	II	No
Northern harrier	*Circus cyaneus*	II	Yes
Northern pintail	*Anas acuta*	II	Yes
Redhead	*Aythya americana*	II	Yes
Sedge wren	*Cistothorus platensis*	II	Yes
Sharp-tailed grouse	*Tympanuchus phasianellus*	II	Yes
Mammals			
Richardson's ground squirrel	*Spermophilus richardsonii*	II	—
Arctic shrew	*Sorex arcticus*	III	—

Source: Hagen et al. 2005

Note:

* Level I species are those having a high level of conservation priority because of declining status in North Dakota or across their range; or have a high rate of occurrence in North Dakota, constituting the core of the species breeding range, but might be at risk rangewide.

Level II species are those having a moderate level of conservation priority.

Level III species are those having a moderate level of conservation priority but are believed to be peripheral or non-breeding in North Dakota.

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